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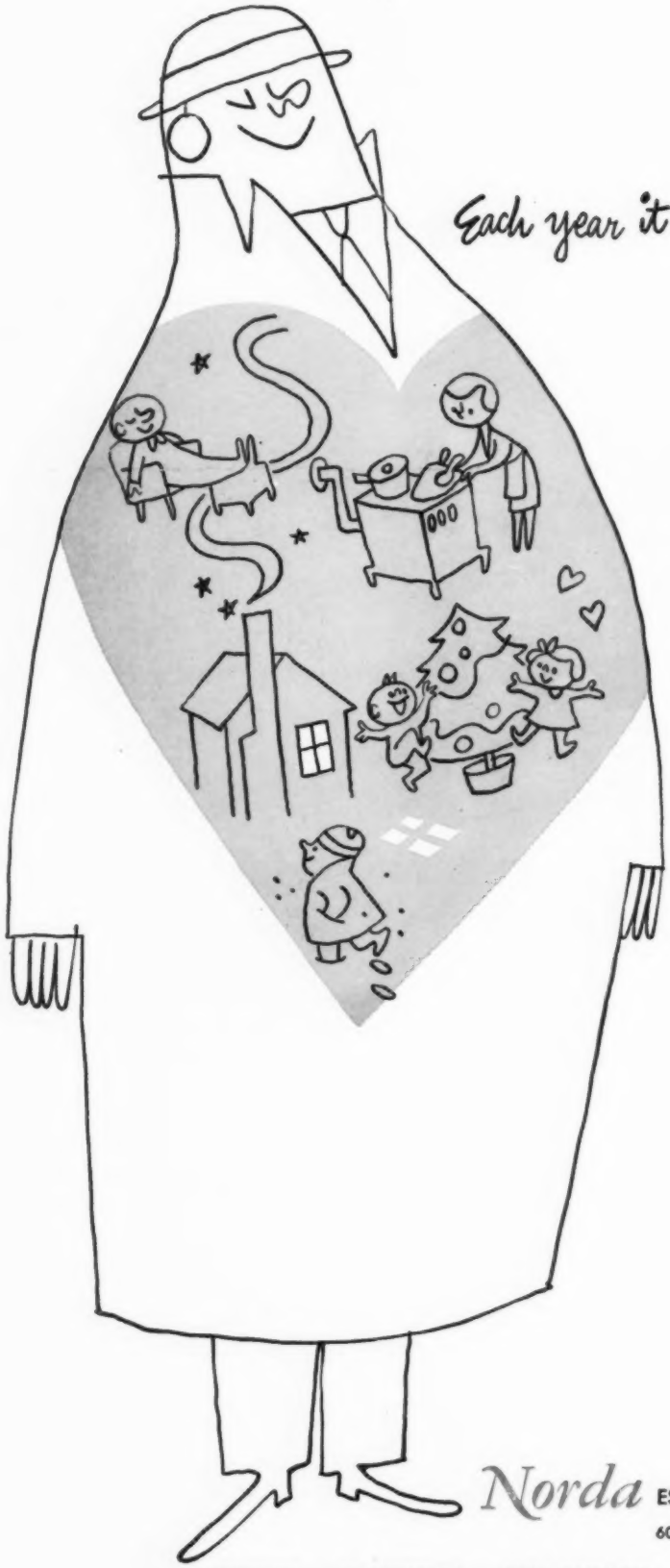
Drug and Cosmetic Industry

DECEMBER 1953



Each year it happens in men's hearts . . .

the Quality of Christmas

Cold, bright nights, all soundless, still as the winking stars . . .

Smells of sweet woodsmoke, climbing straight from ink-black chimneys . . .

Lights from windows on white snow, tracked by friendly, crunching footsteps...

The little laughs of children around gay, tinseled trees . . .

Men's smiles, and women's eyes that dance in the glow of ruddy firelight . . .

The common, rare, wonderful perfumes drifting from spicy kitchens . . .

The warmth . . . the goodness . . . and the love . . .

May "Merry Christmas" always mean happy things like these for you

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Drug and Cosmetic Industry

December 1953. Vol. 73. No. 6.

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U.S.I. CHEMICAL NEWS

December ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1953

NATIONAL PETRO-CHEMICALS $45 MILLION PLANT OPENS

Dedication Ceremonies Held November 11 For Giant Industrial Chemicals Project of National Distillers and Panhandle Eastern

Season's Greetings

From
U.S.I. CHEMICAL NEWS
to its many readers,
contributors, and associates

Selector Takes Guesswork Out of Surfactant Choice

To take some of the laboratory trial-and-error out of building new emulsion formulas with surfactants, results of a manufacturer's experimentation are now available, condensed in the form of an automatic surfactant "selector". The instrument, a pocket-size twin dial arrangement, is said to offer emulsion formulators a precise surfactant recommendation for 96 different and specific formulation problems. Printed on durable card stock, the device measures 10⅝ by 6¾ inches and is accompanied by full directions. The formulas chosen for use on the dials are typical and basic. Therefore, the surfactant recommendations indicated may be used as a guide in solving numerous other problems, the manufacturer states.

Surfactant applications covered on the instrument include: 18 types of cosmetic products, 9 pharmaceuticals, 22 cleaning or detergent formulations, 18 agricultural chemicals, 10 textile chemicals, and 20 miscellaneous industrial formulations such as polishes, lubricants, and soldering fluxes.

New Carbon Black Reduces Glare on Concrete Roads

A new colloidal carbon black is expected to furnish the answer to road glare on many future concrete roads, according to a recent announcement. The obvious solution to road glare is to make the road dark in color. But in the case of concrete, carbon black (the most suitable pigment) neutralizes or counteracts the air-entrainment agents commonly used to make concrete more resistant to weathering. The new colloidal dispersion has been developed especially to overcome this difficulty, it is said. A six-page brochure is available describing the use of air-entrainment agents and carbon black, and shows the proportions needed to achieve various shades of color in roads, sidewalks, and floors.

Chemical Safety Charts

Five new chemical safety charts, designed to give all the important information on handling, storing and shipping hazardous chemicals at a glance, are now available, it has been announced. A similar previous chart covered sulfuric acid. The present five deal with nitric acid, hydrochloric acid and hydrogen chloride, anhydrous and aqueous ammonia, carbon tetrachloride, and chromic acid and chromates.

Text on the charts is simple, concise and printed so as to be easily read. They are 2 by 2½ feet in size and are intended for posting in plants, warehouses, laboratories, and wherever else the chemicals are handled or stored.

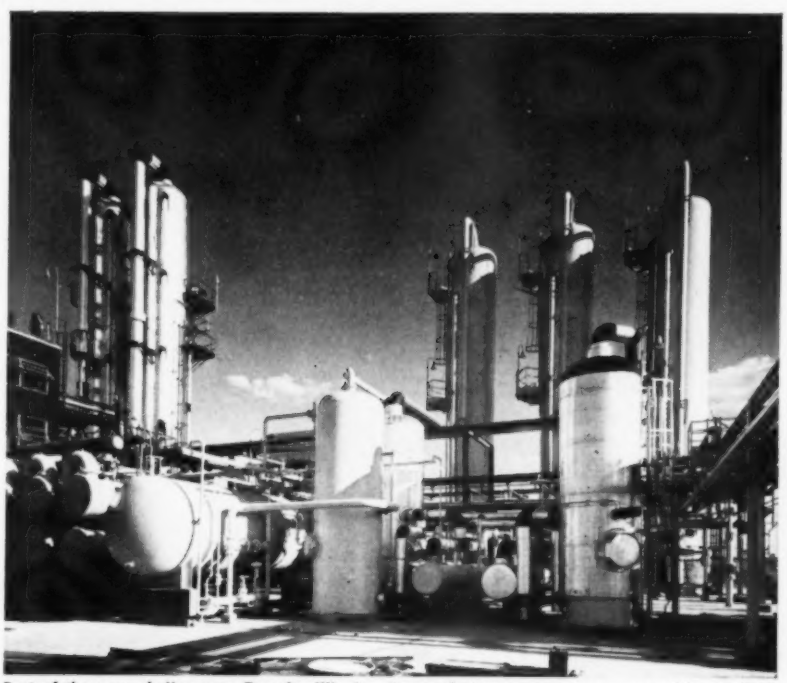
U.S.I. Ammonia and Sulfuric Acid Plants Included in Project

November 11 marked the dedication of the new $45 million National Petro-Chemicals Corp. plant at Tuscola, Illinois, where liquefied petroleum gases and industrial chemicals will be produced from natural gas. The giant plant is owned 60% by National Distillers Products Corp., which manages and operates it, and 40% by Panhandle Eastern Pipeline Co. It represents the greatest step so far taken by National Distillers in a long-range program to diversify its manufacturing operations.

Seven Major Producing Units

Located on a 500-acre site, the new plant consists of seven major producing units:

MORE



Part of the new skyline near Tuscola, Illinois, above what two years ago was prairie cornfield country. The gigantic new National Petro-Chemicals plant is owned jointly by National Distillers Products Corp. and Panhandle Eastern Pipeline Co., and will be operated by National.

CONTINUED

Petro-Chemicals Operation

1. Hydrocarbon extraction and fractionation
2. Ethylene production
3. Ethyl alcohol production
4. Ethyl chloride production
5. Polyethylene production (under construction)
6. Sulfuric acid manufacture
7. Ammonia manufacture (under construction)

The hydrocarbon extraction and fractionation units are the largest in the world for the recovery of hydrocarbons from natural gas. When operating at full capacity, National Petro will process 400 million cubic feet per day of natural gas, which is pumped in from Panhandle Eastern's adjacent compressor station. It will have a daily output of approximately 500,000 gallons of natural gas liquids — propane, butane, isobutane, and natural gasoline. In addition, 10 million cubic feet per day of ethane will be recovered for conversion into ethylene.

Largest Ethylene Unit Ever Built

Petro's ethylene plant, the largest single unit of its kind ever built, can turn out 200 million pounds a year. The ethylene will be used initially for the production of 40 million gallons of synthetic ethyl alcohol and 50 million pounds of ethyl chloride per year. Alcohol production will total about 25% of the country's previous synthetic output. Production of polyethylene is scheduled for the second quarter of 1955. Initial output will be about 25 million pounds per year, with further expansion scheduled for the ensuing two or three years. A substantial portion of Petro's production of all products has been contracted for under long-term agreement.

The natural gas liquids will be distributed by Phillips Petroleum Co. The propane and butane will be sold largely as liquefied petroleum gas under the familiar name "Philgas", a Phillips trademark. The isobutane production will go mostly into manufacture of components of high octane aviation gasoline. The natural gasoline will be sold to oil refiners for blending into motor fuel.

U.S.I. Plants Included in Project

Two new plants of National Distillers U.S.I. Chemicals Co. Division are also located on the Tuscola site and will be integral parts of the entire operation there. One plant is a $2 million sulfuric acid plant which provides acid for the Petro alcohol manufacturing process. Sulfuric acid is also important to fertilizer manufacture. The other plant, still under construction, is a $7 million unit to manufacture 50,000 tons of ammonia per year, some of which will be converted into nitrogen solutions widely used in fertilizer manufacture. Tuscola thus becomes one of the few places in the United States where both sulfuric acid and nitrogen solutions are produced.

Major Contractors Involved

Design of the plant required a year and the services of 400 engineers and draftsmen. More than 2,000 craftsmen were needed to turn the complex plans into reality.

J. F. Pritchard & Co., Kansas City, Mo. designed and built the hydrocarbon extraction and fractionation units, the LPG storage tanks, the power house, water treating and waste disposal units, and general services. An underground propane storage cavern was constructed by MacLean, Grove & Co., Inc., New York.

The Lummus Company, New York, designed and constructed the ethylene plant. The alcohol plant was designed by the Vulcan Copper & Supply Co., Cincinnati, and built by the J. F. Pritchard Co. The ethyl chloride plant was designed and built by the Foster Wheeler Corp., New York.

National Lead Company, New York, designed the acid recovery plant. Administration buildings were designed by Syl. G. Schmidt & Associates, St. Louis, and built by Felmley-Dickerson Company, Bloomington, Ill.

Design and construction of the polyethylene and ammonia plants are in the hands of M. W. Kellogg Company, New York. L'Air Liquide Society, Montreal, is designing the hydrogen and air purification plants. Leonard Construction Company, Chicago, designed and built the sulfuric acid plant; and The Chemical & Industrial Corporation, Cincinnati, is designing and building the nitric acid and nitrogen solution plants.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U. S. I.

Designed to prevent serious Christmas tree fires, a glass globe filled with colored extinguisher decorates the top of the tree, breaks automatically at 160° F. to flood and put out any flash fire as soon as it starts. **(No. 990)**

For stabilizing foods or synergising food antioxidants, a new product called "H-124" shows promise. It acts as a very mild acid acceptor, has excellent ultraviolet absorption characteristics and remarkably low mammalian toxicity. Should be especially useful in extending shelf life of foods exposed to light and air. **(No. 991)**

For continuously measuring thickness variations down to 5 millionths of an inch on paper, plastic sheeting, metal foil, etc., a new device is said to operate on ordinary air under pressure. **(No. 992)**

A new home cleaner reportedly removes dirt, tar, rust and oil from all types of hard surfaces including metals, linoleum, tile, painted surfaces, furniture, plastics and automobiles. **(No. 993)**

Adjustable safety glasses, said to fit 90% of all faces, permit easy replacement of lenses and have a double bridge design claimed to more than double the frame strength. **(No. 994)**

An inorganic gelling and bodying agent for lubricating greases with potential uses in paints, adhesives, rubber, inks, waxes, resins and insecticides, is described as a colloidal form of the mineral attapulgite with a strong, needle-like particle structure. **(No. 995)**

To waterproof and revitalize shoes and other leather products, an aerosol chemical spray is being marketed which is claimed to protect individual cells in the leather rather than to be a plastic coating. One container treats 24 pairs of shoes, the maker states. **(No. 996)**

A new all-purpose electrical and metal degreaser is reported to be about 12 times less toxic than carbon tetrachloride, to dry faster, and to be useful on natural and synthetic fabrics as well as metals. **(No. 997)**

A new rubber film can be electronically sealed to itself, is said to permit assembly of vessels of any size with welded seams stronger than the material itself. **(No. 998)**

A new fast drying aluminum paint can withstand 1200° F. temperatures without discoloring or blistering, can be used for plating burners, stoves, hot pipes, ovens, radiators, etc., according to the manufacturer. **(No. 999)**

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Aroflat*—for special flat finishes
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Aroplaz*—alkyds and allied materials
Aropol*—copolymer modified alkyds
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Natural Resins—all standard grades

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Pyrethrum Products: Liquid and Dust
Rotenone Products: Liquid and Dust

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Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide
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Ethyl Benzoylacetate
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Riboflavin Concentrates
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Vacatone* 40

OTHER PRODUCTS
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Ethylene
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Liquid Chlorine
Metallic Sodium
Methionine (Pharm.)
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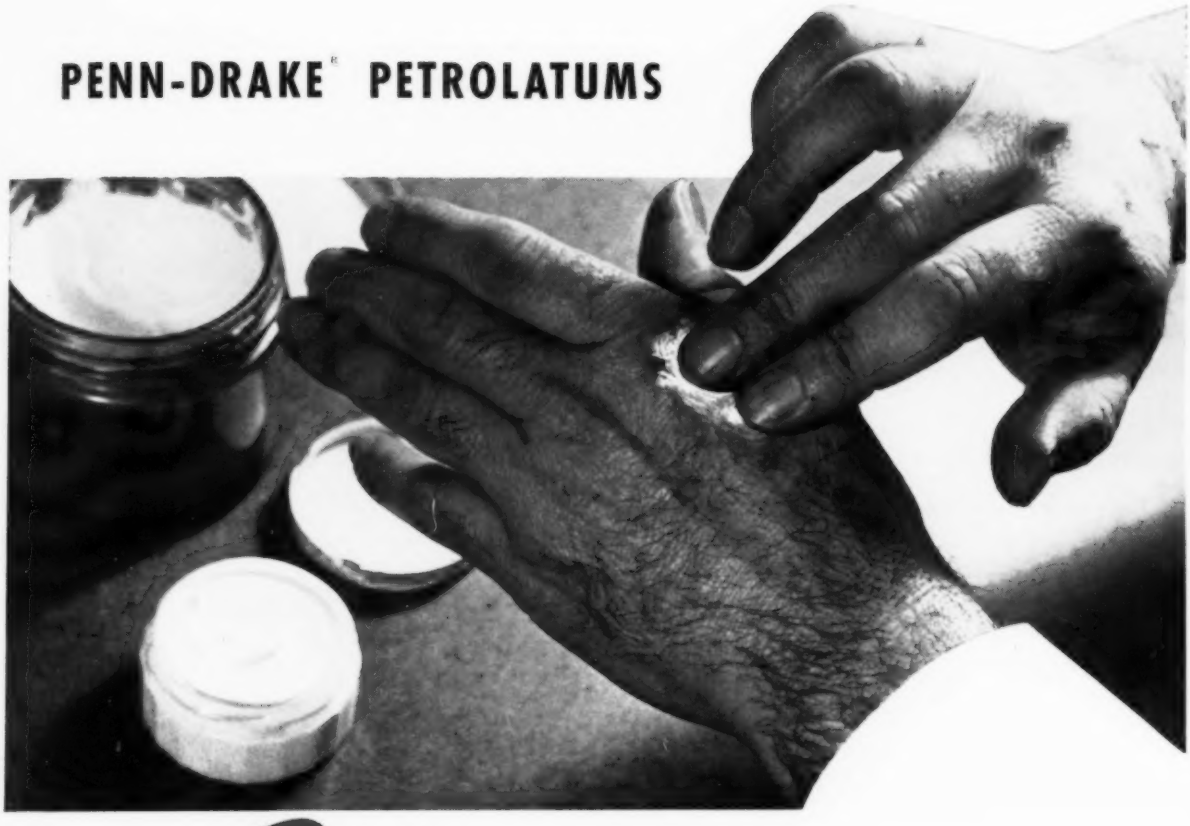

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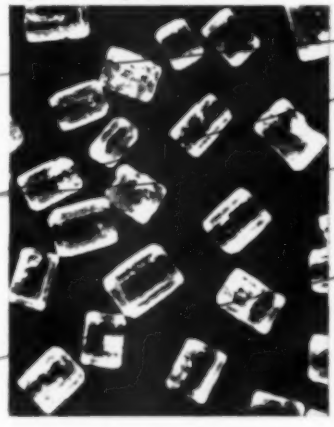

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Research and Production for the Nation's Health

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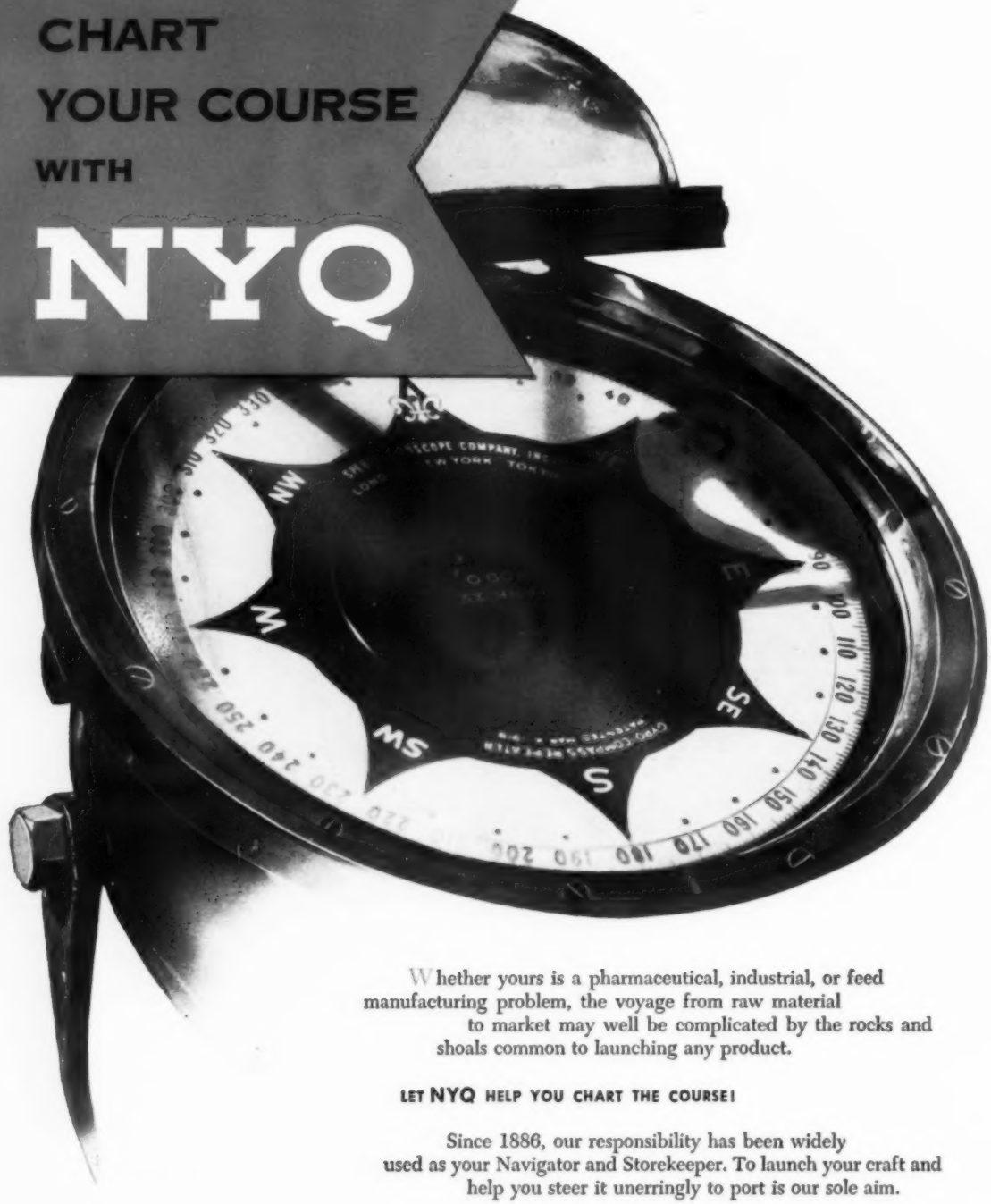

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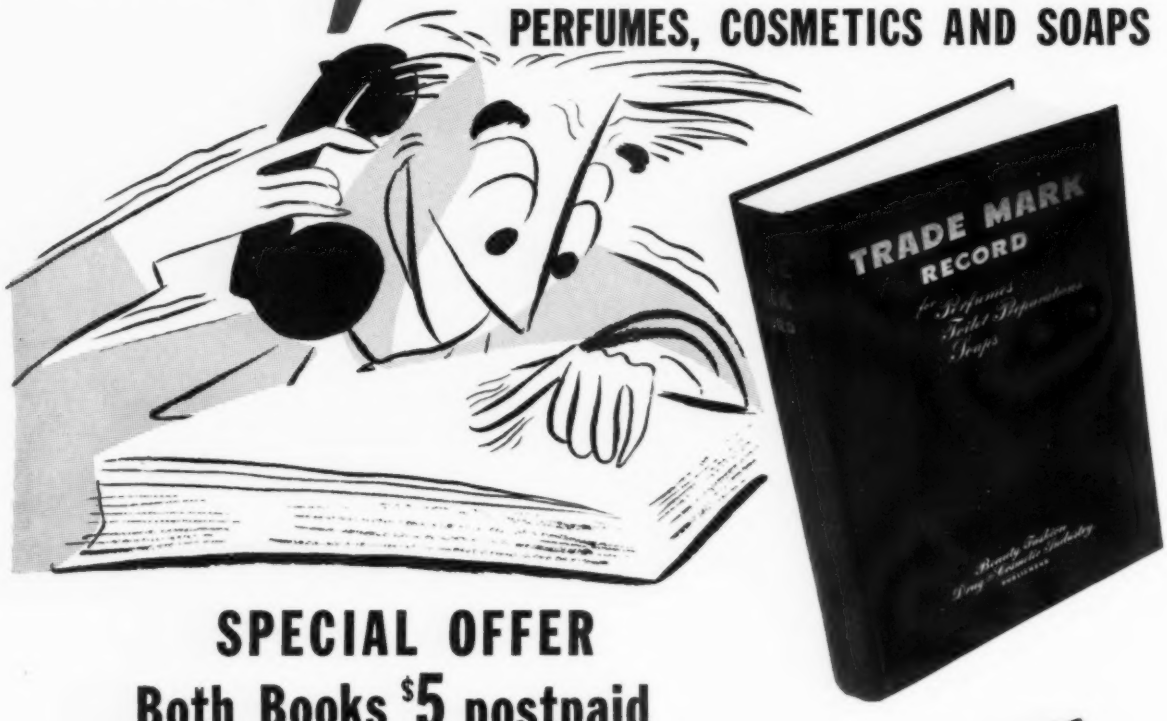

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Glycerine has found wide use in the drug and cosmetic industries because of its great versatility. It's used for sweetening and lubricating. It can act as a demulcent, humectant, solvent, vehicle, and suspending agent. Glycerine is reported to be an ingredient in over half the liquid medications compounded by druggists. Its uses in the food field are similarly wide and varied.

Booklets describing Glycerine's properties and applications in the food field and in drugs and cosmetics are yours for the asking. Write Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

Nothing takes the place of Glycerine

Clearing the Air over Grasse!

CONTRARY to some reports that have appeared lately in the trade journals, there seems to be no decline in the activity of the Raw Material Industry in Grasse.

As regards JASMIN, about 560,000 kilos of flowers were processed and the harvest was over by September 25 resulting in an exceptionally fine quality product. About 70 kilos of Concrete produced by G.I.F.P.A. this year as a security measure were absorbed by the Grasse Houses together with about 70 kilos carried over from 1952.

The production of Italian Jasmin was considerably reduced after the middle part of September and there was not enough good quality 1953 Italian Jasmin Concrete to take care of the demand. In fact there is still a demand for high quality 1953 Italian Concrete, but, apparently, it cannot be met with the 5/600 kilos of Italian Concrete which are being offered presently, but do not seem to find a ready market among real connoisseurs.

It seems that there is practically no surplus besides the quantities reserved by the Grasse Houses for their regular customers and the Jasmin situation appears healthy. The position might even become tight should additional requests be received.

As regards ROSE, over 700,000 kilos of flowers were processed against 400,000 kilos in 1952. It has been completely absorbed and about 60 kilos of Concrete produced by G.I.F.P.A. as a security measure were also purchased by the Grasse Houses.

The tendencious reports that have appeared recently regarding a decline in the future of Grasse are without real foundation. The manufacture and extraction of floral and other natural products continue in Grasse as in the past. The healthy activity between the Grasse Houses and the Paris Perfumers still exists, because it is impossible to imagine quality perfumes without quality floral and other natural products (Jasmin, Rose, Orange Flower, Orris, Mousse de Chêne, etc.).

Sole distributors in the U. S. and Canada for CHARABOT & CIE., successors to HUGUES AINE, Grasse, France

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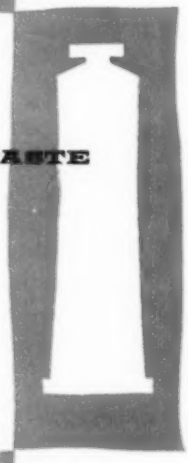

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Polymerization regulator in manufacture of synthetic rubber and polyester resins.

Stabilizer against deterioration of transformer oils.

Antimycotic agent.

Intermediate in the preparation of fungicidal sprays, mildew proofing agents, algacides, alkyl derivatives, oxidation inhibitors, etc.

REACTIONS AT THE HYDROGEN ATOMS

Chlorination: Reacts readily in nitrobenzene with chlorine in the presence of catalytic amounts of iron to form 2,3-dichloro-1,4-naphthoquinone.

Oxidation: Reacts with air in alkaline media to form 2-hydroxy-1,4-naphthoquinone.

Ammination: Reacts with amines to form the corresponding aminonaphthoquinone and 1,4-naphthalenediol.

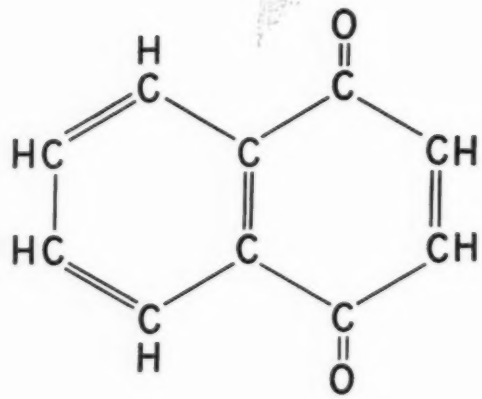
Alkylation: Undergoes alkylation with diphenylcarbinol to yield 2-diphenylmethyl-1,4-napthoquinone.

REACTIONS AT THE OXYGEN ATOMS

Reduction: Is reduced by stannous chloride to 1,4-naphthalenediol.

Condensation With Ketenes: Reacts with ketenes to form mono- or di-lactones, which when heated decarboxylate to form methylene derivatives.

Condensation With Hydroxylamine: Reacts with hydroxylamine to form the mono- and di-oxime.



REACTIONS AT THE ETHYLENIC LINKAGE

Addition of Dienes: Reacts with dienes, according to the conventional Diels-Alder synthesis, to form tetrahydroanthraquinone derivatives. When these reaction products are treated with a hydrogen acceptor, the corresponding anthraquinone is obtained.

Addition of Diazoalkanes: Reacts with diazomethane to form 1-H-naphtho 2,3 pyrazole- 4,9-diol which is oxidized by air to 1 H-naphtho 2,3 -pyrazole 4,9-dione.

AVAILABILITY

Now available in commercial quantities which can be increased to meet reasonable requirements.

SEND FOR BULLETIN I-4

Certain of the above uses are covered by process patents, references to which are given in National Technical Bulletin I-4. This informative bulletin also shows in detail the reactions listed above and may suggest possibilities for using this highly reactive organic intermediate in your current work or your exploratory research.

PHYSICAL APPEARANCE: Greenish yellow powder.

MOLECULAR WEIGHT: 158.1

MELTING POINT: 123°-126°C.

SOLUBILITY: Very slightly soluble in water; soluble in ethyl alcohol, ethylether, chloroform, benzene and acetic acid.

PURITY: Furnished as a moist powder containing 15-20% water and, on a dry basis, 95-98%, 1,4-naphthoquinone.

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Useful addition to present standard fixatives

Does not discolor perfumes, creams, soaps, and other cosmetic preparations

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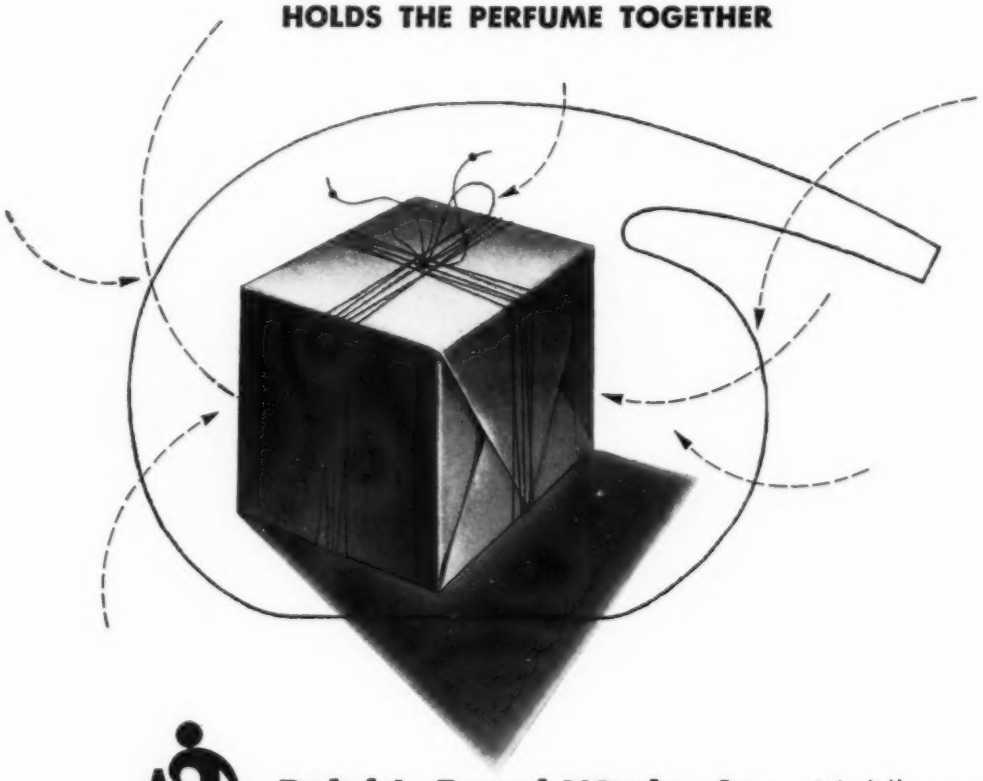
HOLDS THE PERFUME TOGETHER



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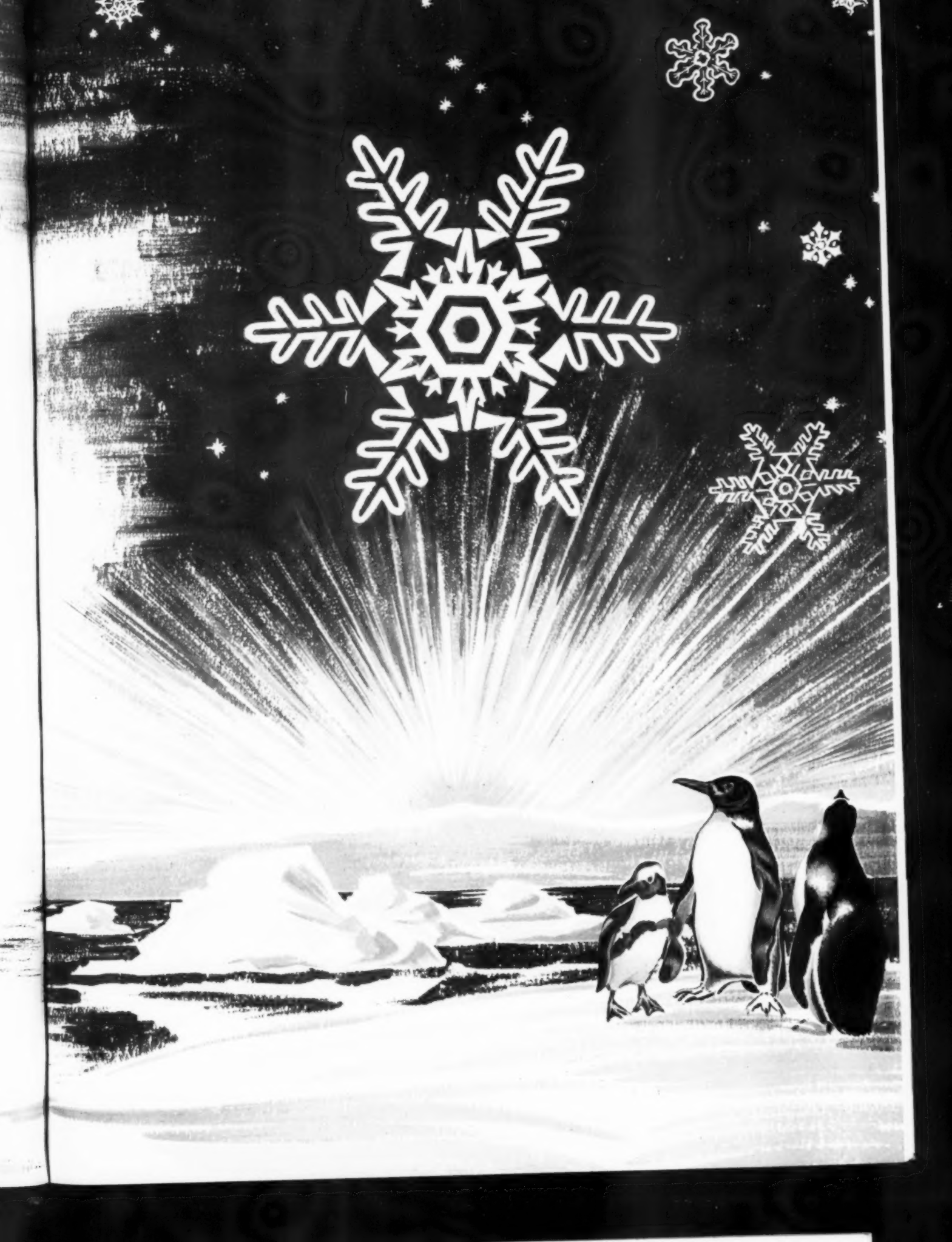

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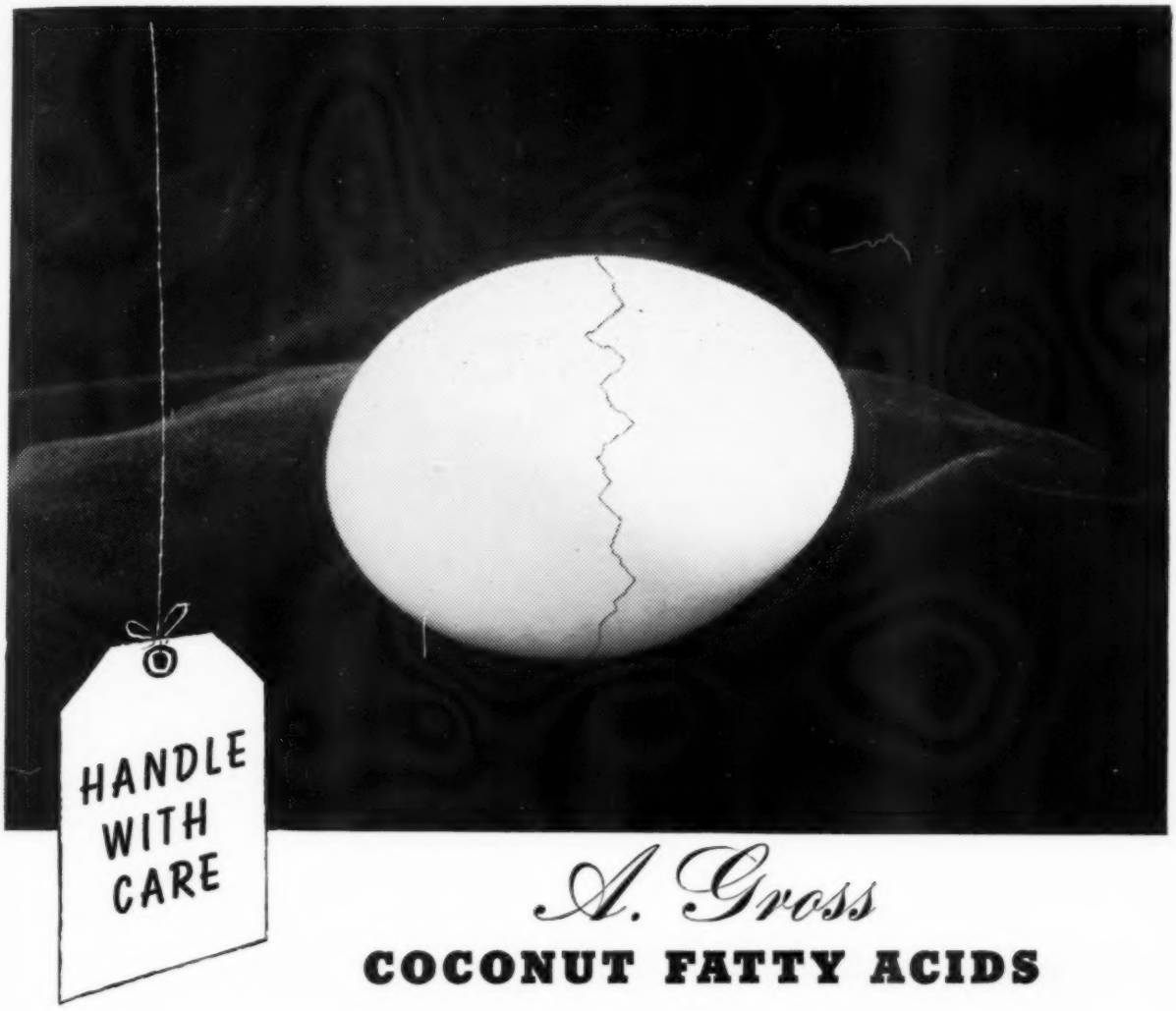

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Into the Fatty Acids that you buy whether GROCO 26—SPECIAL COCONUT FATTY ACIDS OR GROCO 24—REGULAR COCONUT FATTY ACIDS go years of research and manufacturing experience. A. GROSS & COMPANY manufacture a full line of Fatty Acids in stainless steel equipment using the most modern splitting methods and distillation processes.

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Dr. Otto Jacobi and Miss Gertrude Lantzsch examining subject

Shown here, studying the effects of a cosmetic on the skin surface, blood capillaries and skin temperatures of a subject, are Dr. Otto Jacobi, *right*, and Miss Gertrude Lantzsch, *left*.

Kolmar Laboratories, with one of the largest research and technical staffs in the world devoted exclusively to the development and manufacture of private label cosmetics, has taken a unique step in further expanding its research and services.

When Dr. Herbert Heinrich, Research Director of Kolmar Laboratories, contacted Dr. Otto Jacobi, chemist and physiologist, of Wiesbaden, Germany, he was very favorably impressed with his advanced methods in the field of cosmetics, especially his unique methods of studying the effects of cosmetics directly upon the skin.

As a result, Dr. Heinrich arranged that Dr. Jacobi and Miss Gertrude Lantzsch, who has been his assistant for 10 years, bring their entire laboratory to Milwaukee, including many special instruments developed by Dr. Jacobi.

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Dr. Jacobi has specialized in skin physiology for 15 years. He studied at the University of Frankfurt am Main—Freiburg, Switzerland—and the University of Giessen, Germany. He is the author of 20 technical papers on the behavior and reaction of normal skin and the influence of cosmetics on normal and sub-normal skin.

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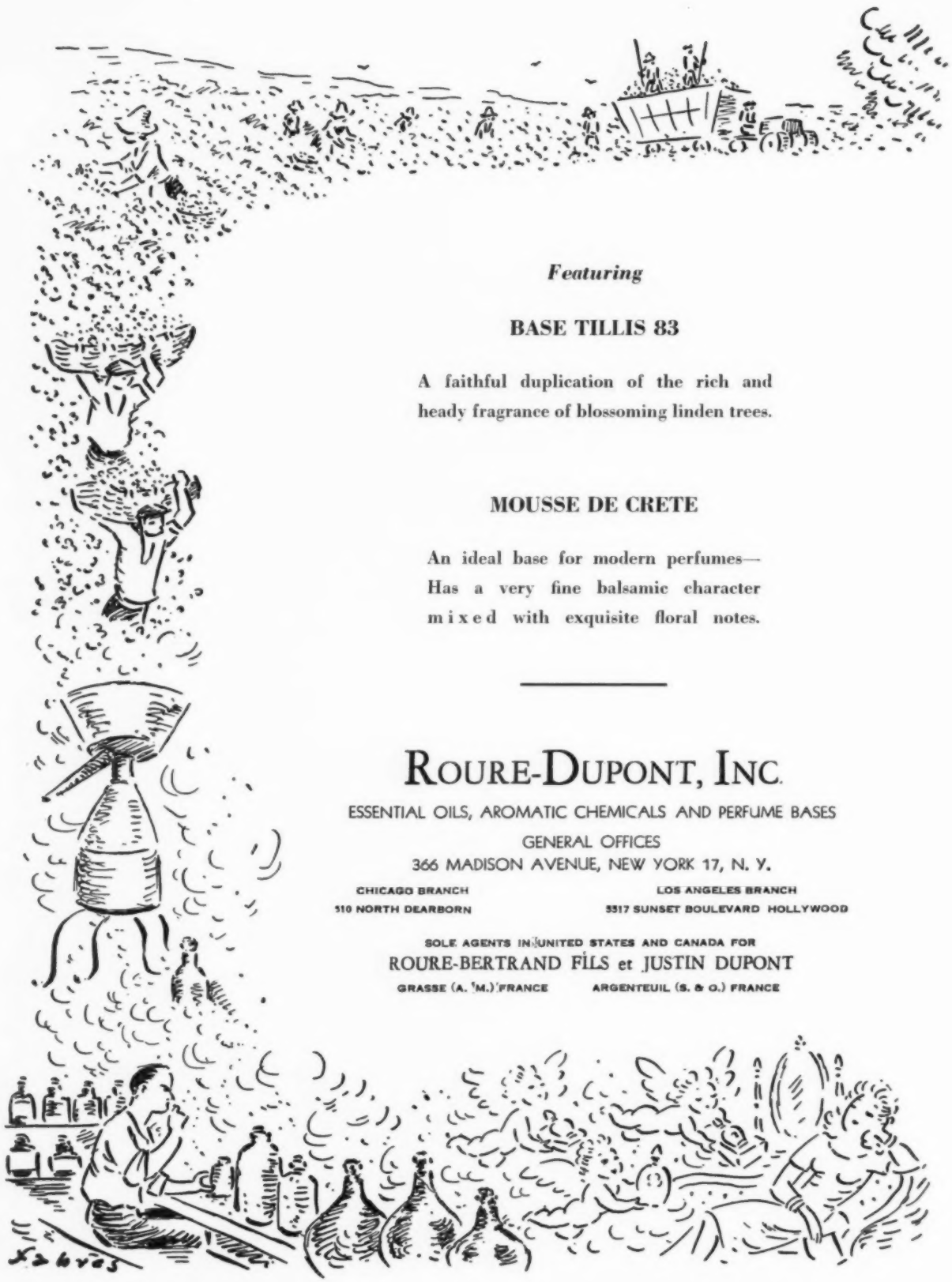
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An ideal base for modern perfumes—
Has a very fine balsamic character
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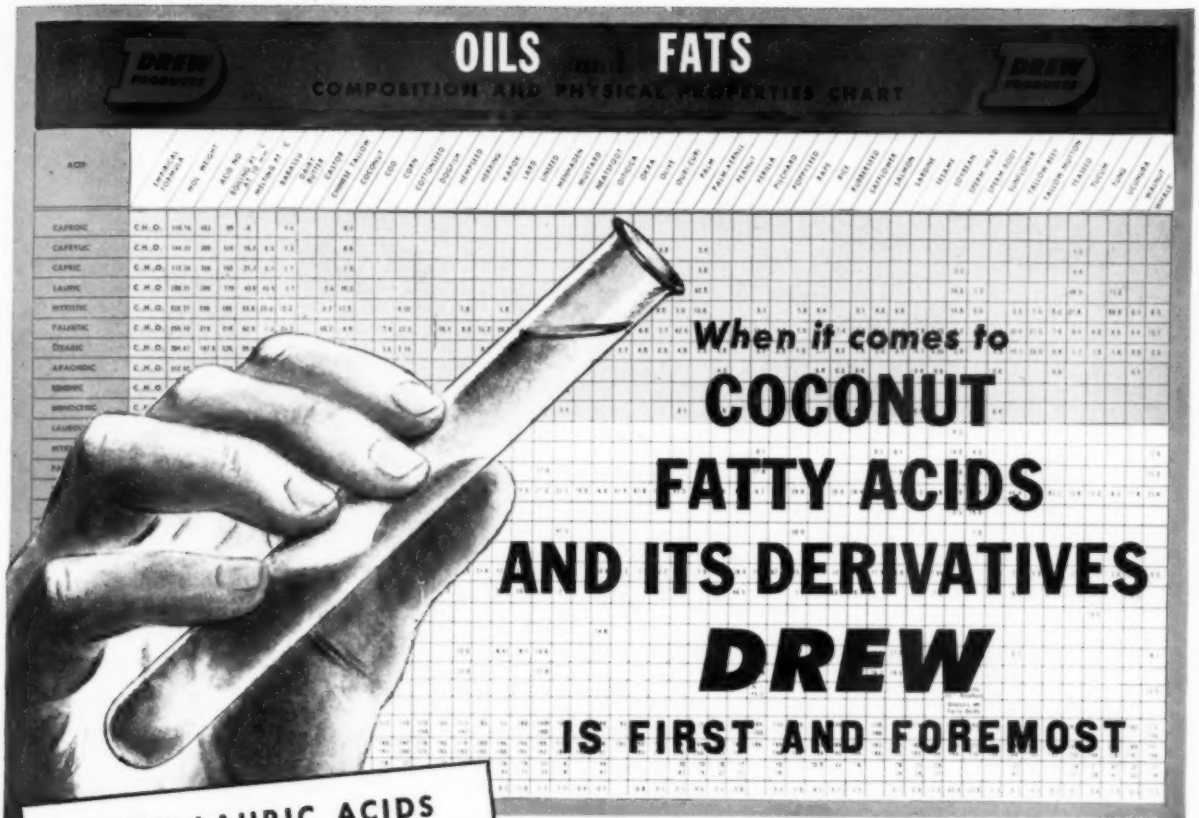

DREW LAURIC ACIDS

APPROXIMATE CHEMICAL COMPOSITION	AAB %	ABL %	AB %	ABH %	AAAR %
Capric C6	—	—	—	—	—
Caprylic C8	2.0	1.5	1.0	1.0	1.0
Capric C10	4.0	3.5	3.0	3.0	2.0
Lauric C12	90.0	70.0	60.0	60.0	45.0
Myristic C14	2.0	13.0	18.0	18.0	22.0
Palmitic C16	—	8.0	7.0	7.0	11.0
Stearic C18	—	1.0	1.0	8.0	2.5
Oleic C18	2.0	3.0	7.0	3.0	11.0
Linoleic C18	—	—	3.0	—	5.5
Linolenic C18	—	—	—	—	—
APPROXIMATE CHEMICAL DATA	**AAB**	**ABL**	**AB**	**ABH**	**AAAR**
FFA	139-144	138-141	126-132	126-132	116-126
TITRE °C	37.0 Min.	30.0 Min.	24-28	29	30.0 Max.
IODINE VALUE	3.0 Max.	5.0 Max.	8-16	3.0 Max.	14-22
ACID VALUE	277-287	275-281	251-263	251-263	232-253
SAP. VALUE	277-287	275-281	251-263	251-263	232-253
COLOR	15.0/2.0	20.0/3.0	20.0/3.0	15.0/2.0	35.0/5.0

Take LAURIC ACIDS, for instance

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- **WIDE CHOICE**
- **OUTSTANDING QUALITY**

Drew markets a variety of Lauric Acids, individually tailored to specific needs in the chemical, drug and cosmetic fields. Continual development of diversified physical properties makes it possible for you to select exactly the right Lauric Acid for your formula. And Drew's consistent uniform quality gives you a *plus* factor that means a head start for your product.

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As a vehicle for syrups, mouthwashes and other pharmaceutical solutions, sorbitol adds new distinction to your product. It lends an agreeable body, that makes medication more pleasant to take. Its superior emollient effect helps to soothe rasping or irritated mucous membranes.

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sorbitol leaves a fresh, cool sensation in the mouth. Its mildly sweet flavor adds new palatability . . . helps to mask medicinals.

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has superior resistance to fermentation by many microorganisms.

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to oral tissues even after surgery, as proved by tests and use.

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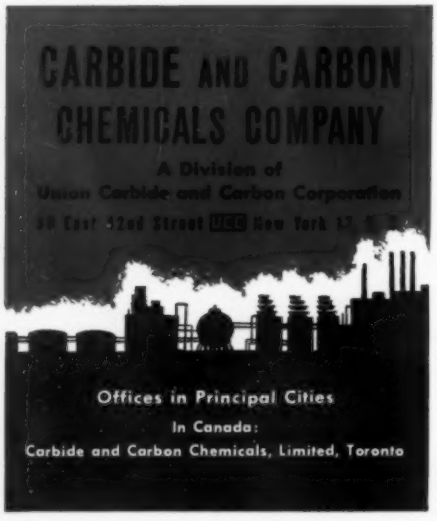
PROPERTIES

Specific Gravity at 20/20°C. 0.7838
Boiling Point at 760 mm. Hg . . . . . 80.1°C.
Freezing Point . . . . . —44.9°C.
Toxicity . . . . . in general, comparable to acetic acid.

Acetonitrile is miscible with water in all proportions and with many organic and inorganic compounds. In the presence of mild acids or alkalies, acetonitrile hydrolyzes to acetic acid or acetates. It does not liberate hydrocyanic acid.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Further Information Available

For prices and details on Acetonitrile and its uses, call or write the nearest CARBIDE office. Ask for technical bulletin (F-7501).

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FELTON ESSENTIAL OILS...
"THERE ARE NO FINER"
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Lemon 5-Fold
Lemon Terpeneless
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Limes Distilled
Limes Expressed
Limes 5-Fold
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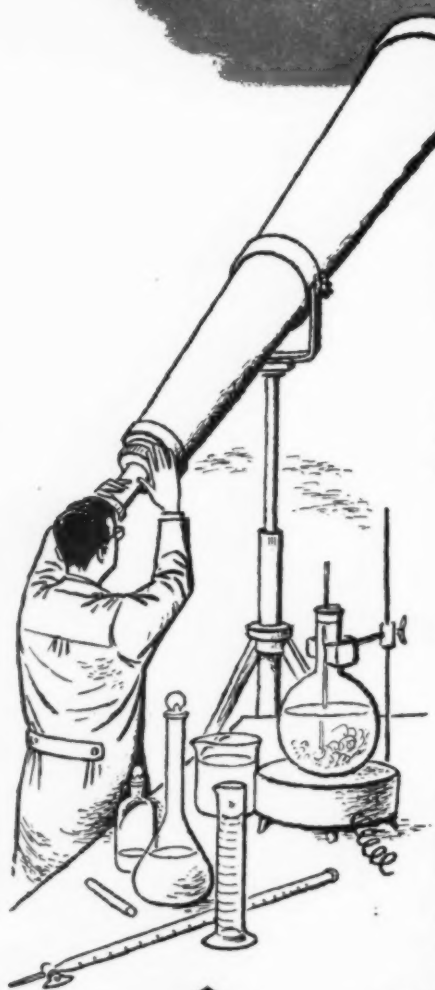
Take a closer look at... HEYDEN BENZYL CHLORIDES



The high quality and uniformity of Heyden Benzyl Chloride have established it as a dependable raw material in the production of essential oils, pharmaceuticals, dyes, resins, plasticizers and quaternary ammonium compounds. Research chemists find this low cost, reactive intermediate useful in the synthesis of new products for many and varied applications.

Heyden's extensive work in the chlorination of toluene has also produced a number of chlorobenzyl chlorides. These compounds have many interesting applications in organic syntheses, and deserve a close look by your research department.

Benzyl Chloride **Ortho-Chlorobenzyl Chloride**

Para-Chlorobenzyl Chloride

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Pentachlorobenzyl Chloride
(Available in research quantities)

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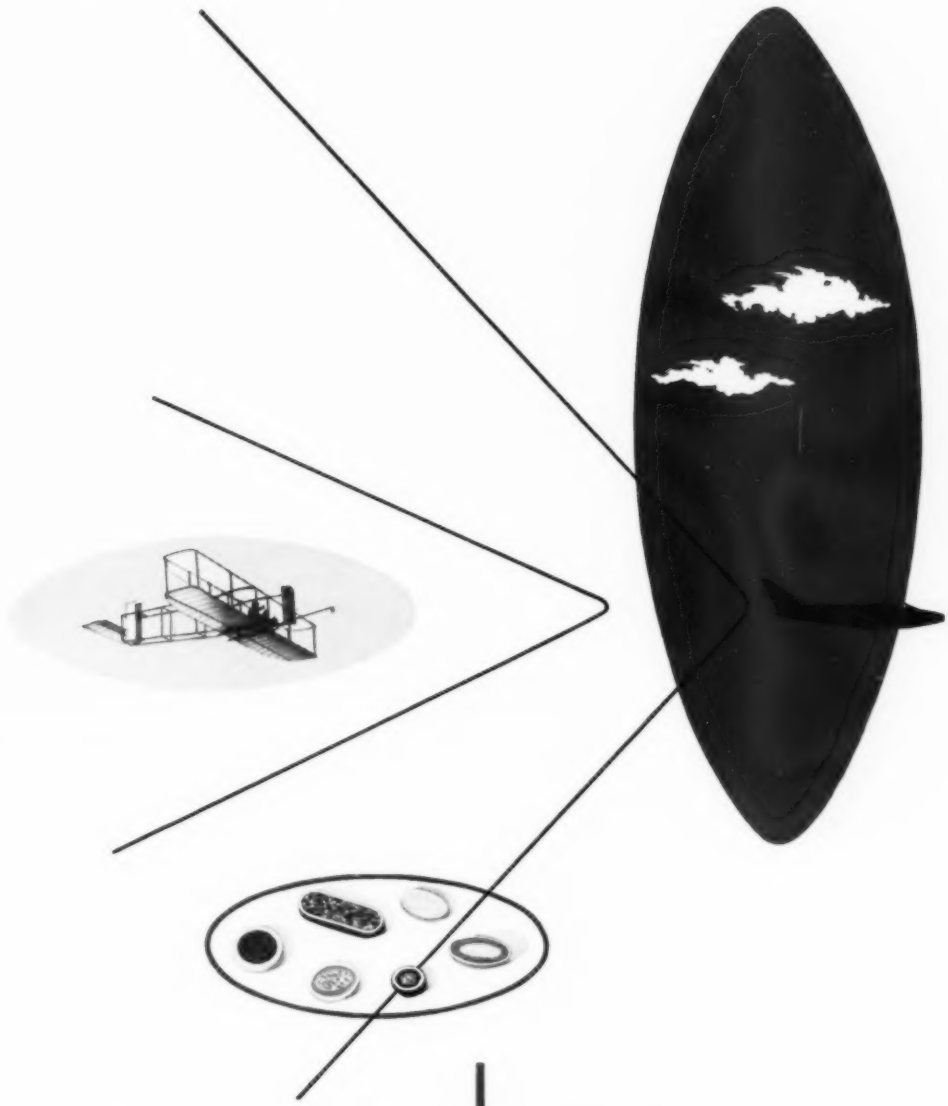
the exacting **science** *of* **pharmaceutical engineering**



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To create and produce these dynamic medicinals is no task for a mere private formula maker. In fact, the old-fashioned private formula concern really went out with the "flying machine."

Strong Cobb, equipped with complete research and manufacturing facilities, fills the need in the industry for modern pharmaceutical engineering to serve the great drug manufacturers. Today, more than ever, Strong Cobb is dedicated to the modern dynamic concept and will continue its leadership in the engineering of better pharmaceuticals.

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Q. Who FILLS the Container for

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OF STERLING DRUG, INC.

A. REGAL CHEMICAL CORPORATION

115 Dobbin St., Brooklyn 22, New York

The Centaur-Caldwell Division chose Regal to package their brushless lather shave cream, MOLLE DELUXE.

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Learn more about the first company to employ statistical quality controls.

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One of Nature's delicate odors, caught for the first time at the climax of its brief hour of perfect fragrance in Albert Verley & Company's new

Mimosa fleur extra

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by ALBERT VERLEY & COMPANY, IN

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offers you new creative inspiration—
adding to your resources a perfect replica
of a delightful, little-known aroma.

While Mimosa is an old classic, we feel that until now there has never been a successful interpretation of the fresh flower.

The natural fragrance is delicate and dries with extreme speed. From the perfumer's standpoint, the blossoms live but a day.

To catch this delightful fragrance at its peak, with perfect fixation, was the goal of Albert Verley and Company's research. We are happy to announce that this objective has been attained — and that we are now able to offer Mimosa Fleur Extra as a brand-new, original note for blended compositions, or as a unique, appealing extract capable of standing alone in any company.

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The above is from a current advertisement in the Journal of the American Medical Association.

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Phenothiazine N.F. (regular and drench grades for veterinary use) (also sulfas above)

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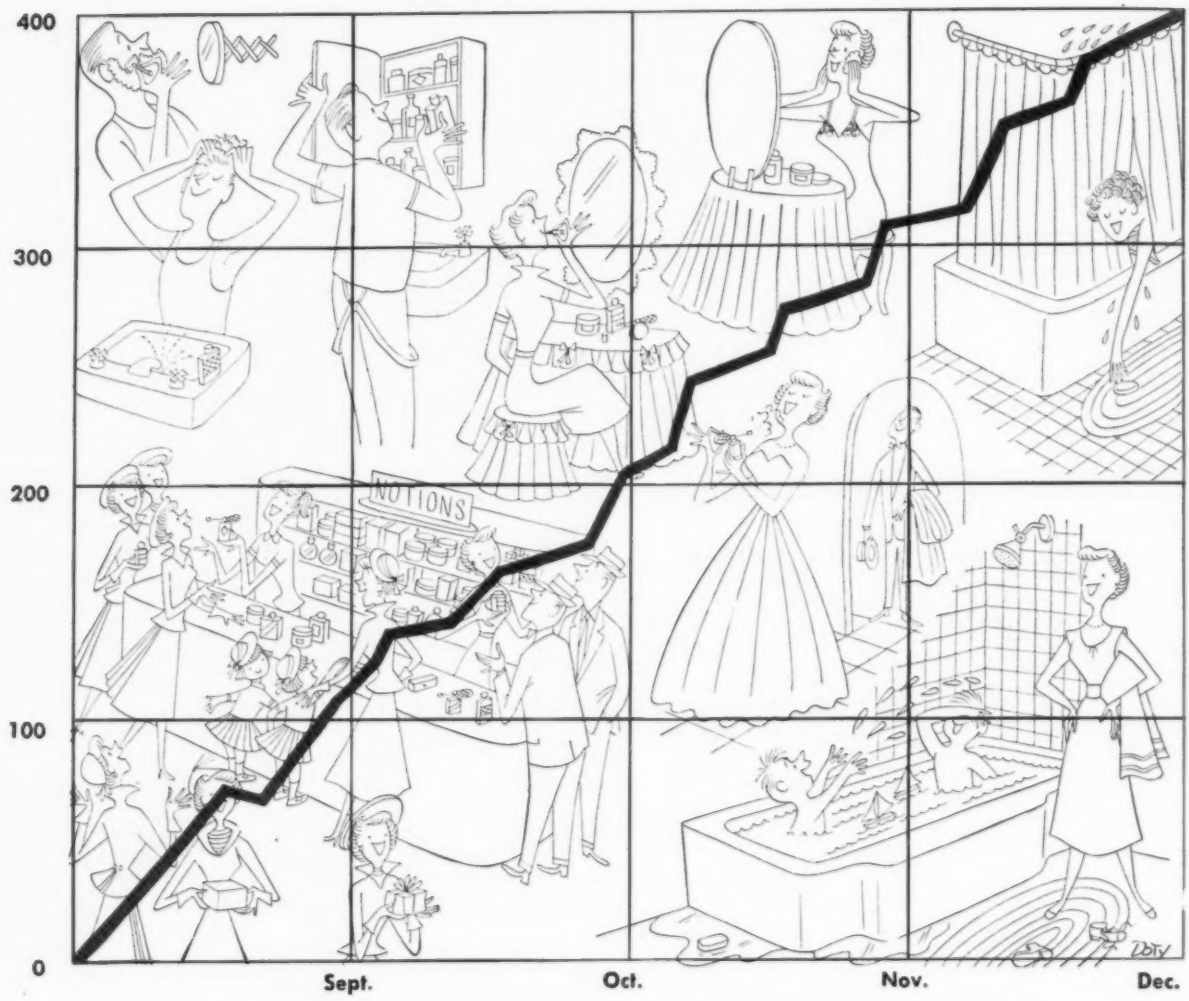

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BECAUSE . . . The ultimate test of a product's "rightness" is its wide and enthusiastic consumer acceptance. Cosmetic and toiletry products using VERONA fragrances meet this test daily on the retail firing line . . . toiletries which are quality products *through and through* . . . market leaders.

Because . . . VERONA has concentrated the efforts of its research and development staff on the problems of helping the market leaders capture *and hold* consumer preference—by constantly developing formulae that bring out *the full fragrance potential* of their products.

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USE VERONA PRODUCTS TO BUILD SALES FOR *Your* PRODUCTS

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TRITON AS-30 and AS-35 are two new members of a large family of surface active members offered by Rohm & Haas Co. These lauryl sulfates utilize fatty alcohols of our own manufacture.

TRITON AS-30 and AS-35 are recommended for use in cosmetics, household detergents, and high-foaming industrial cleaners. Samples and literature promptly available upon request.

TRITON *is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries*

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Provides a straight line to the most profitable points of sale.

1 *Reaches the retailers who know how to sell perfumes and cosmetics and who do sell well over 80% of these products, except low priced, mass distributed toiletries.*

2 *These retailers are nearly all (86%) located in the 168 metropolitan markets which do 75.27% of all apparel sales and over 85% of the perfume and cosmetic sales of selected cosmetic distribution.*

3 *The key to selling in these stores is the girl behind the counter. Beauty Fashion's club subscription, editorial policy, school training program and personal contacts have, over 35 years, made these girls an intimate part of Beauty Fashion's readers.*

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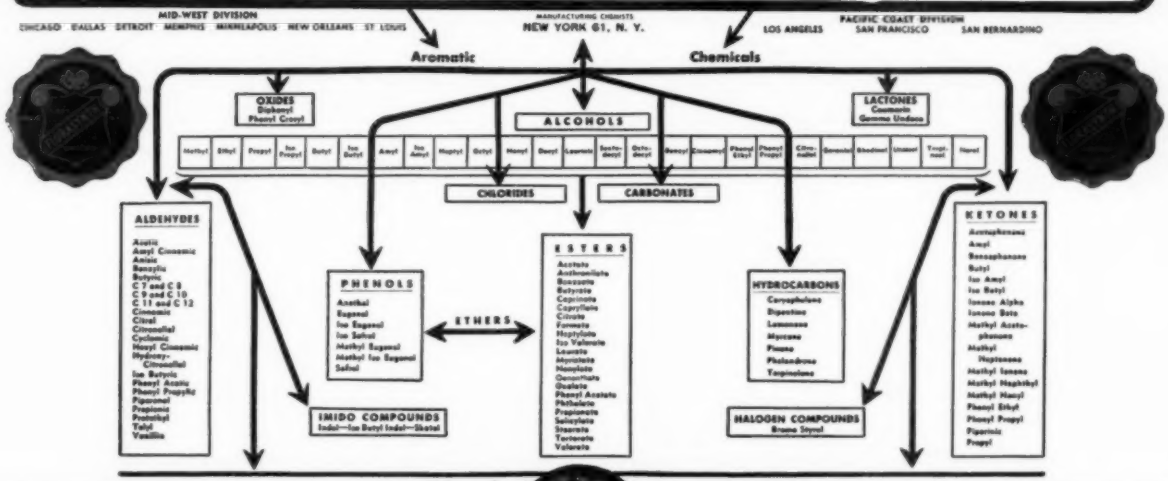

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Phenobarbital is phenobarbital.

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when using fine chemicals . . . to be sure (√) *check the source*

"I'm sharpening my drills for Mr. Homberg; he falls for all the new tooth paste ads."

Plant Inspection

While in this issue we publish a paper by Arthur D. Herrick concerning plant inspection provisions of the Food, Drug, and Cosmetic Act, we also wish to present a statement on this subject distributed by the American Drug Manufacturers' Association to its members and prepared by Leslie D. Harrop, general counsel and chairman of the legislative committee of the ADMA. We do this in the belief that manufacturers cannot have too many authoritative statements as to their rights under the recent plant inspection amendment to the Food, Drug, and Cosmetic Act.

Stating that it is *not* recommended that any manufacturer withhold from the Food and Drug Administration any cooperation that he has been willing to give in the past or cares to give in the future, Mr. Harrop states that Congress set forth in great detail the limitations it intended to place on the words of the section. Congressman Bennett stated (and Chairman Wolverton associated himself with the statement):

"Mr. Bennett of Michigan: Just one other thing. That language relates to several things. This bill authorizes the inspector to go upon the factory premises. Then it provides what he may do when he gets on the premises, and that is the all-important thing here, in my judgment. He may, under this language, inspect the *factory*, *warehouse*, *establishment*, or *vehicle*, and all *pertinent equipment*, *finished* and *unfinished materials*, *containers*, and *labeling* therein. Now, the intention of the committee, as is set forth on page 7 of the committee report, was to make this a *limited inspection* and to *strictly construe* the language, 'factory, warehouse, pertinent equipment, vehicle', and so forth, so that the Food and Drug Administration could not construe such language to mean that they could go into the factory to inspect the owner's profit-and-loss statement, his complaint files, or to inspect files related to the qualifications of the people working for him, *and many other similar things*.

"Mr. Harris: Including the formula of the manufacturer of a product.

"Mr. Bennett of Michigan: Yes. These are *some* of the very things the committee had in mind when it limited in specific terms the authority that the Food and Drug Administration had to carry out these inspections."

Stating that it was the view of lawyers in attendance at the Legislative Committee meeting that the mandatory inspection is limited to the area specified by the words set forth above and that such words are to be strictly construed against the regulatory agency, the statement continued:

"There appear to be two ways of safeguarding the legal rights of the drug manufacturer (neither of which withholds from the Food and Drug Administration any assistance of the type it may have been receiving from the manufacturer).

"1. Request that all visits (other than for formal inspection) be made without service of the notice specified in Sec. 704. (Correlative to this, if the inspector insists upon serving the notice the manufacturer should confine the inspection to the narrow limits set forth in the section.)

"2. Advise the inspector when such notice is served that anything which in the opinion of the manufacturer falls outside of the required information of Sec. 704 will be furnished only with a written disclaimer (submitted by the manufacturer) listing such information, and stating that it is furnished voluntarily and that it is not required under the provisions of Sec. 704.

"Either method should adequately protect the manufacturer's legal rights.

"In the Health, Education, and Welfare Department release on August 27, 1953, the Food and Drug Administration admitted that Congress did not intend to include prescription files, formula files, complaint files, or personnel files within the provisions on Factory Inspection. Nevertheless, as an administrative practice, the Food and Drug Administration stated that it intended to have Food and Drug inspectors ask for all of this material. A proviso was added that if a refusal was met, the inspector was not to press the matter.

"If formal notice is served that the visitation is an in-

spection under Sec. 704, and the drug manufacturer fails to insist upon the legal limits set forth by that section, and instead supplies this or other information requested, but not within the scope of factory inspection, he ultimately may be held to have waived his rights to the strict construction of the language of the section.

"The legal right to restrict a fishing-expedition type of inspection to proper limits may well depend upon how consistently our members keep the record clear by demonstrating that any information furnished beyond these limits is voluntary and not in compliance with any requirement of Sec. 704.

Vitamins and Antibodies

Evidence of a relationship between adequate vitamin intake and ability to produce antibodies to combat infection and disease was presented recently at a Symposium on Protein Metabolism at the University of Toronto. Dr. A. E. Axelrod of Western Reserve University reported that vitamins studied in recent experiments indicated that "the action of the vitamin might be primarily concerned with the production and maintenance of the antibody synthesizing cells of the organism."

Pointing out the importance of the role of vitamins in antibody formation, Dr. Axelrod emphasized three points of interest:

"First, there is our concern with the broad field dealing with the interrelationships between the components of the diet and resistance-susceptibility to disease. The significant role of the antibodies in determining resistance to disease is well recognized, particularly in the case of 'acquired' immunity. It is, therefore, appropriate to inquire into the role of the vitamins in antibody production.

"Second, there is the recognized need for further information on the mechanism of antibody synthesis. It is now known that the intake of certain vitamins is at least one environmental factor which may influence the extent of antibody synthesis. This ability to regulate antibody production offers possibilities as a powerful tool in the unraveling of the now-obscure mechanism of antibody synthesis. Since antibodies are highly specialized proteins, these studies are essentially probing into the mechanisms of protein synthesis in general.

"Third, there is the prospect of utilizing the extent of antibody production as a measure of nutritional status. Observations . . . indicate that the process of antibody synthesis may represent a more sensitive criterion of dietary adequacy than that of growth."

In this work, sponsored by the National Vitamin Foundation, the following vitamins were used: pyridoxine, pantothenic acid, riboflavin, thiamine, vitamin A, biotin, folic acid, niacin-tryptophane, vitamin D, and vitamin B_{12}. Every effort was made to secure a deficiency state specific for the vitamin in question, excepting the niacin-tryptophane group where a mixed deficiency was produced. Each control animal received the identical diet plus the crystalline vitamin in question.

"The level of circulating antibodies in rats following the antigenic stimulus of human red blood cells is markedly decreased in pantothenic acid, folic acid, and pyridoxine deficiencies," Dr. Alexrod said. "There is indirect evidence to indicate that these vitamins may be concerned with the synthesis of antibody protein. Naturally, it is important to know whether a relationship exists between these findings and the general problem of nutrition and resistance-susceptibility to disease. Clarification of this very significant problem will follow the demonstration that the immune response to the infectious agent is markedly affected in a given vitamin deficiency state, and that this change in immune response is a vital factor in determining the resistance-susceptibility to the infection."

National Pharmaceutical Council

Initial steps were taken early this month for the formation of the National Pharmaceutical Council, Inc. Purposes of the Council are:

To benefit public interest by promoting the highest professional standards in the manufacture, distribution, and dispensing of prescription medication and other pharmaceutical products.

To benefit the pharmaceutical industry by promoting public relations programs on behalf of pharmacists and others in the industry.

To promote the interests of the public, physicians, pharmacists and others in the pharmaceutical industry by encouraging the highest standards of ethics and integrity in the manufacture, distribution, and dispensing of prescription medication and other pharmaceutical products.

To collect and disseminate information concerning laws, regulations, and governmental agencies dealing with the manufacture, distribution, and dispensing of prescription medication and other pharmaceutical products as a contribution to the better understanding thereof in the public interest.

Member companies are: Abbott Laboratories, Ciba Pharmaceutical Products, Hoffmann-La Roche, Lederle Laboratories, McNeil Laboratories, the Wm. S. Merrell Company, Pfizer Laboratories and J. B. Roerig & Co., G. D. Searle & Co., Smith, Kline & French Laboratories, E. R. Squibb & Sons, the Upjohn Company, Winthrop-Stearns.

Officers of the Council are: president, Dr. Theodore G. Klumpp; vice-presidents, L. J. Barrett, Franklin P. O'Brien, O. J. May, Henry Wendt, Jr.; secretary, John Bradley; and treasurer, L. J. Sichel.

Directors are: William L. Arscott, L. J. Barrett, Paul Gerden, Frank N. Getman, Robert A. Hardt, Leslie D. Harrop, Theodore G. Klumpp, Henry S. McNeil, Franklin P. O'Brien, C. K. Raiser, L. J. Sichel, Henry Wendt, Jr.

Power to Narcotic Commissioner

The authority of the Commissioner of Narcotics to compromise certain minor violations of the narcotic laws has been made final in Treasury Department Order No. 180. Previously, a compromise of any criminal case arising under the narcotic laws could only be accepted by the Secretary of the Treasury, the under secretary or the assistant secretary. Now the authority to accept compromises rests in the Commissioner, ex-

cept where the criminal liability relates to registration or to delinquency in payment of taxes.

Clapps Baby Food Division Sold

American Home Products Corporation has sold its Clapps Baby Food Division to Duffy-Mott Company, New York, for a reported price of $300,000. The sale does not include the factory building but includes all production equipment which is to be moved by Duffy-Mott to its own plant or plants within six month's time.

Walter Silbersack, president, American Home Products Corporation, explains the sale by saying:

"Fundamentally American Home Foods (American Home Products subsidiary) are not packers of seasonal foods such as Mott's. Tomatoes are the only seasonal product now handled by our Foods Division, and of course they are an ingredient of Chef Boy-Ar-Dee products. Clapps Baby Foods did not fit in, either saleswise or promotionwise, with the line of food specialties marketed by us. The sale of Clapps will enable American Home Foods to exploit the growing sales opportunities in its Chef Boy-Ar-Dee, G. Washington, and Burnett lines, which will be supported by heavier promotional campaigns in 1954. . . .

"American Home Foods is on the alert for the acquisition of other food specialties which can be advantageously combined and promoted with its present lines."

Duffy-Mott Company is said to be the nation's largest processor of apple products and prune juice.

Pfizer Facts

Terming 1953 the first harvest year for Chas. Pfizer & Company's four-year plant- and market-expansion program, Pfizer Executive Vice-president John L. Davenport told the Cleveland Security Analysts early this month that the net profits for the first nine months of 1953 are 32 per cent above those of the preceding year. Mr. Davenport noted that during the four years the company has spent $25 million for plant expansion; built an ethical sales division—Pfizer Laboratories—staffed by 600 professional representatives; expanded foreign sales to include 132 countries, with production and packaging plants in Belgium, Canada, Brazil, and Great Britain; created an agricultural sales division which is currently experiencing a rapid increase in sales; purchased J. B. Roerig & Co., of Chicago, as a retail vitamin sales subsidiary; and arranged for marketing of a complete line of steroid hormones in cooperation with Syntex, S.A., of Mexico and Puerto Rico.

Despite these expansions in areas which Pfizer did not exploit before 1949, the company's basic line of fine chemicals sold in bulk continues to account for 30 per cent of its total volume, and the sales force of this group was increased 25 per cent in 1952, said Mr. Davenport. Through production research the company is still able to sell bulk penicillin at a profit despite the current rock-bottom price of this antibiotic, he said.

The company is now marketing three forms of hydrocortisone, and Mr. Davenport cited the introduction of this product as an example of the diversification which is pushing Pfizer sales to a record this year. The company is applying its knowledge of fermentation techniques used in the manufacture of Terramycin and penicillin to produce hydrocortisone from readily available raw materials by "the most economical process in use today."

Biological research continues to play a major part in Pfizer's growth, according to Mr. Davenport. Development of Cortril (Pfizer brand of hydrocortisone) depended on discovery of a fermentation process by which it could be made from steroid intermediates obtained by Syntex from the Mexican yam. Pfizer is conducting an intensive promotional campaign for its line of sex hormones obtained through agreement with Syntex, he added.

Two new products mentioned by Mr. Davenport are Bonamine, an improved motion sickness remedy giving 24-hour protection with a single dose, and Terramycin in oil for cure of the costly air sac (CDR) disease of poultry.

Stating that Pfizer spent $5 million on research last year, Mr. Davenport described the firm's research facilities, including a parasitology laboratory in Maywood, N. J., virology laboratories in Groton, Conn., a 700-acre experimental farm in Terre Haute, Ind., and extensive chemical and biochemical facilities at the home plant in Brooklyn, N. Y.

Model Anti-Substitution Bill

The Drug, Chemical and Allied Trades Section of the New York Board of Trade has been studying the subject of drug substitution for some time. At its November 19th meeting, the DCAT Executive Committee adopted a Model Anti-Substitution Bill upon recommendation of a special committee headed by George S. McMillan of Bristol-Myers Company. The bill was drafted by a sub-committee of lawyers from leading firms in the industry and is the result of months of study. It is felt that this represents a practical solution to this problem since it can be used when and where it is needed.

The committee states that many attempts have been made to plug this seeming loophole, and that the law recently passed by the State of Oregon is one of the most noteworthy. The committee also states that the average legislator is not familiar with the technical problems involved in such a subject and this "model bill" which covers the salient points can be changed to fit in with the Pharmacy Laws of the various states, which while basically the same, vary as to details from state to state.

The Model Anti-Substitution Bill follows:

Section 1. Definition. The term "drug" as used in this Act shall include (1) all substances recognized in the United States Pharmaceopoeia, the National Formulary or the American Homeopathic Pharmacopoeia, or any supplement to any of them, and (2) any substance or mixture of substances intended to be used in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals or to affect the structure of any function of the body of man or other animals.

Section 2. Prohibited Acts. The following acts or the willful causing thereof are hereby prohibited: Substituting a different drug, brand of drug, or drug product of a different manufacturer or distributor for any drug,

brand of drug, or drug product ordered by prescription or otherwise.

Section 3. Disciplinary Powers and Penalties. The Board of Pharmacy may revoke or suspend any license issued by the Board of Pharmacy, or impose on the holder thereof a money penalty not to exceed $500, for any violation of Section 2 of this Act after reasonable notice and opportunity to be heard. Any holder found after hearing by the Board to be guilty of such violation shall pay the costs of the proceeding before the Board. The costs, together with any money penalty, shall be paid to the Board within 30 days after such finding or within such extended period or periods as may be fixed by the Board. In the event that the holder fails to make due payment of the costs together with any money penalty, the Board may suspend the holder's license until payment or may recover the same by civil action.

Section 4. Costs in Civil Action. Any corporation, association or individual who shall suffer damage to his person, property or business by reason of any act or acts constituting a violation of Section 2 shall, in addition to any other existing remedies, recover the costs of any action instituted by him for damages or to prevent the continuance of such act or acts, including a reasonable attorney's fee.

Section 5. Rules and Regulations. The Board of Pharmacy may make such rules and regulations not inconsistent with the laws of this State as it may deem necessary to carry out the provisions of this Act.

Section 6. Separability. If any provision of this Act is declared unconstitutional or the applicability thereof to any person or circumstance is held invalid, the constitutionality of the remainder of the Act and the applicability thereof to other persons and circumstances shall not be affected thereby.

Lady Esther Sold

Lady Esther, Inc. has been sold to Chesapeake Industries, a New York holding company, for $3,275,000. The sale was made as requested in the will of the late Alfred Buisel, and was the result of competitive bidding in the Chicago Probate Court. The next highest bidder was Helene Curtis Industries with a bid of $2,700,000. The court earlier rejected a bid of $2,700,000 from Lehn & Fink Products. Disposal of the company was requested of the court by the First National Bank of Chicago, and Dr. Joseph Schultz, president of Lady Esther, co-executors of the estate of Mr. Buisel who died December 13, 1951.

Lady Esther has been resold by Chesapeake Industries to Lansing Foundation, Inc., a New York charitable organization. The new owner announces that personnel and production operations will remain unchanged.

Management Award to Parke, Davis

Parke, Davis & Company has been awarded a Certificate of Management Excellence, according to an audit report issued by the American Institute of Management. Copies of the report are obtainable from the Institute at 125 East 38 Street, New York 16.

Statements in the report include that the company's widely diversified line of medicinal products present complex production problems, particularly "since only 15 per cent of its manufactured goods account for nearly 85 per cent of its annual sales." "With its diversified products, the proportion of the total domestic pharmaceutical market covered by Parke-Davis is larger than that of its three leading competitors." "A major improvement in the company's operations in recent years has been a concentration on research into personnel relations, something which had been neglected to the detriment of production efficiency." "The rapid growth of Parke-Davis during the past decade can be attributed, in large measure, to its consistently vigorous sales program. Net sales increased from $42,276,830 in 1942 to $138,136,475 in 1951—the highest point in the company's history." " As to sales portents for the near future, the Institute is confident that the company's demonstrated ability and experience in merchandising its products will enable it to meet new challenges and to maintain its world-wide markets." "So thoroughly have these (Parke-Davis) products been accepted abroad, that even hospital staffs in many countries would be startled to know that Parke-Davis is not native to their economy."

Tums Ad Claims

Advertisements for Tums will no longer claim that their use eliminates the need for discretion or restraint in connection with overeating, excessive smoking or overindulgence causing excessive gastric acidity, according to a stipulation signed by Lewis-Howe Company, and approved by the Federal Trade Commission.

The company will also discontinue the representation that baking soda is an irritant to the stomach, or any other misrepresentations of the characteristics of baking soda or the circumstances under which its use might prove harmful. The company agrees to stop representing that baking soda over-alkalizes or causes "acid rebound" except to the extent that such conditions might result when it is used excessively or in excessive amounts. The stipulation states the cited advertising claims appear contrary to the weight of available scientific evidence and expert opinion.

F.T.C. Order Against Antell

F.T.C. Hearing Examiner John Lewis has issued an initial decision prohibiting certain advertising representations of Charles Antell Formula No. 9, Charles Antell Shampoo and Hexachlorophene Soap.

The order forbids claims that Formula No. 9 will prevent baldness or loss of hair; promote hair growth; cause the hair to curl; loosen the scalp or help dandruff or infected scalp; or remedy split hair or damage from improper dyeing, permanents, burning or other harmful practices. Also banned are claims that lanolin is the main ingredient in Formula No. 9; that lanolin is the only natural grease absorbed by the hair or scalp; that the lanolin in the product is absorbed by the scalp to the extent that it will reach the roots of the hair; and that the lanolin in the product cleanses the hair.

Claims that the use of Formula No. 9 will give the hair

health or vitality are outlawed, except to the extent that brushing, pulling, and massaging the hair and scalp regularly with the product stimulates circulation around the hair roots and thereby helps to maintain normal scalp and hair health. Representations that the use of Formula No. 9 will not change the color of the hair or will not leave grease on the hair must be limited to cases where it is used in moderate amounts as directed. If used "in excessive amounts," the examiner said, the product may darken the hair and will leave grease on the hair of some persons.

Advertisements for Charles Antell Shampoo may not state that its hormone content has any cleansing action on the hair.

The order further prohibits any misrepresentation of Hexachlorophene as a cleansing agent. It also bars claims that its use will prevent impetigo or cradle cap in babies, or prevent the development of pimples, boils, blackheads, or other skin blemishes.

The order also hits the practice of representing usual and regular prices as "reduced" prices.

Dargavel Foundation

The John W. Dargavel Foundation, voted at the convention of the National Association of Retail Druggists last year in St. Louis, is scheduled to commence operations on January 1, 1954. The purposes of the Foundation are:

1. To make available to individual retail druggists funds to assist them to reestablish their respective businesses which have suffered damages from fire, flood, tornado or other acts of God.
2. To assist students of pharmacy to finance their professional education.
3. To provide relief in the form of outright gifts to individual retail druggists to help them through periods of emergency such as serious illness, accidents, and similar situations which the recipients are unable at the time to finance for themselves. This help will be administered by the Foundation as a separate function provided sums in excess of $100,000 are contributed to the Foundation by the retail druggists of America.

The plans include a capital fund of $250,000 for purposes 1 and 2 and another fund for outright gifts for cases of emergency. This latter fund is to be derived from contributions in excess of $100,000 from retail druggists.

Merrell 125 years Old

The Wm. S. Merrell Company, Cincinnati, started in 1828 by William Stanley Merrell with a capital of $200, is celebrating its 125th year in business during 1953.

Sholl Drops Ad Claims

Scholl Manufacturing Co., Chicago, has stipulated with the Federal Trade Commission concerning advertising claims for Dr. Scholl's arch supports and shoes. The company will stop representing that Dr. Scholl's arch supports assure relief; that they are universally endorsed by the medical profession; that they help restore foot balance or body posture; or that they are useful in cases of varicose veins. Also to be discontinued are claims that Dr. Scholl's shoes promote foot health or proper body posture; that they are anatomically correct; that they assure "proper fit"; or that they assure avoidance of suffering from corns, callouses, bunions or weak arches.

As a result of many requests for reprints of our cover illustrations, we now have a limited number available, beginning with the October issue. They will be sent to those requesting them. This will permit readers, who wish to frame the illustrations, to keep the magazine in its original condition.

Certification for Tetracycline

Tetracycline, the newly introduced antibiotic, has been ruled as subject to certification under Section 7 of the Food, Drug, and Cosmetic Act, because, according to the Food and Drug Administration, it is a derivative of chlortetracycline (Aureomycin).

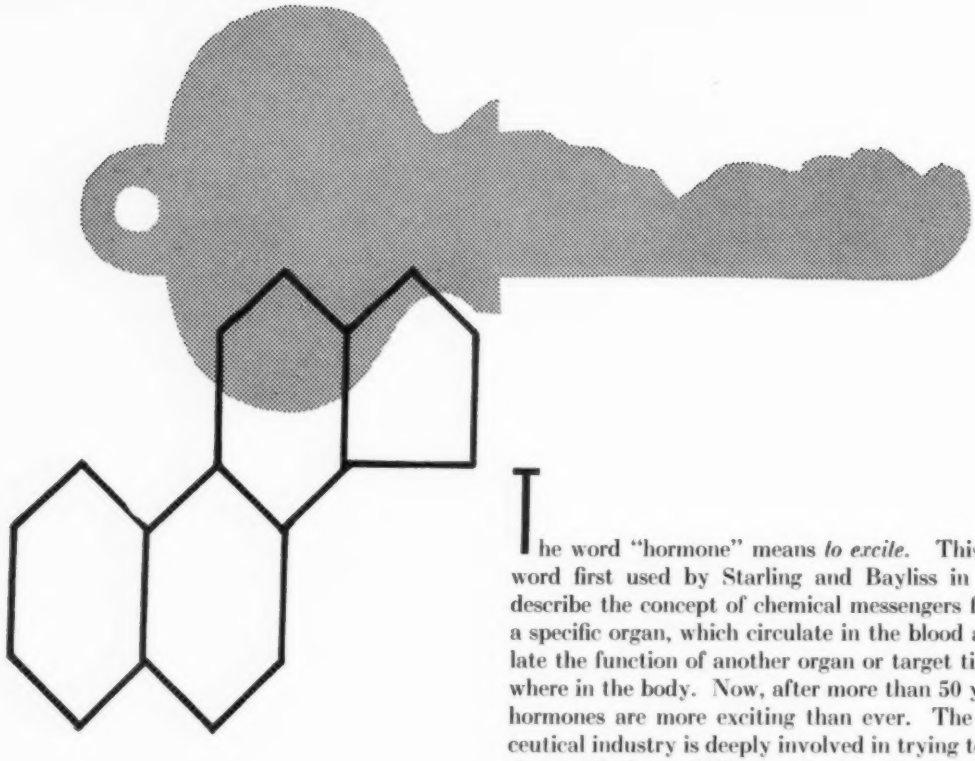
Heyden Antibiotics to Lederle

Heyden Chemical Corporation sold its Antibiotics Division to American Cyanamid Company December 1, for $12 million. This price is approximately $6 million in excess of the book value, according to John P. Remensnyder, chairman, and Simon Askin, president of Heyden. Most of the inventories of the Antibiotics Division have been sold to American Cyanamid at prices which will approximate 85 per cent of the book value and amount to more than $1.5 million. The assets sold to American Cyanamid include Heyden's Princeton plant and all intangible assets of the Antibiotics Division including all patents, patent applications and inventions relating to antibiotics. The sale does not include Heyden's stock interest and royalty arrangement in the French antibiotics company, Societe Industrielle Pour la Fabrication des Antibiotiques. Heyden is now engaged in disposing of these assets.

Mr. Remensnyder and Mr. Askin state that discontinuance of Heyden's antibiotic business was undertaken because of "substantial lossesi ncurred during the past two years. These losses resulted primarily from sharp price declines caused by excess capacity in the entire penicillin and streptomycin industry. These price declines affected most severely bulk producers like Heyden which do not have the extensive distribution system of many of the established pharmaceutical houses."

American Cyanamid President Kenneth C. Towe has announced that the acquired facilities will be administered by the Lederle Laboratories Division, and that Edwin H. Carnarius of Princeton, formerly Plant Manager for Heyden, will be in full charge of the plant. Said Mr. Towe:

"The acquisition will result in a broadening of Cyanamid's line of antibiotics, in that we will be in a position now to produce, at Princeton, such mold-derived drugs as penicillin, streptomycin, dihydromycin, and neomycin, not produced by Cyanamid at present."



Steroid Hormone Products

A Key to the Future

by Norman Applezweig
CONSULTING BIOCHEMIST

The word "hormone" means *to excite.* This was the word first used by Starling and Bayliss in 1902 to describe the concept of chemical messengers formed in a specific organ, which circulate in the blood and regulate the function of another organ or target tissue elsewhere in the body. Now, after more than 50 years, the hormones are more exciting than ever. The pharmaceutical industry is deeply involved in trying to harness the medical possibilities of the hormones which Starling predicted for them; namely, that their use would eventually permit an "absolute control of the workings of the human body."

The hormones known to us at present can be divided into the phenolic derivatives, proteins and steroids. In the first category, little difficulty has been experienced in isolating, synthesizing and improving upon structures such as epinephrine and thyroxin. While the structures of protein hormones are so complex that we cannot yet duplicate them by synthesis, the isolation, characterization and large-scale production of the protein hormone, insulin, is a matter of proud history for the pharmaceutical industry.

By comparison, steroid hormone products, although relative newcomers, offer the greatest challenge to research workers in this industry. Steroid hormones have, since their discovery, been considered as glamour products. Here we find that microgram quantities of pure crystalline substances can be used to manipulate maleness and femaleness, mineral and carbohydrate metabolism, inflammation and growth processes! Despite the fact that the steroid molecule, with its subtle structural vagaries, represents an exceedingly difficult problem for the organic chemist to wrestle with, brilliant advances have been made in reproducing natural steroids and inventing new ones. The challenge of steroid hormone research was summed up by Dr. Gregory Pincus, one of the outstanding leaders in this field, when he wrote in 1946:

"From conception to death, the steroid hormones regulate, control, arbitrate and defend. With dexterity and imagination chemists have synthesized compounds that perform and facilitate each of the various effects of the hormones. With the array of activities and com-

pounds available we are predestined to full biochemical explanation of these activities. Unknown only are the rate and manner of the eventual revelation, but therein is the key to the charm and excitement of experimentation."

From the knowledge that has been garnered in the last 25 years of steroid research, a pattern is emerging which strengthens the hope of those who believe that drugs can be fashioned which will control all of the functions of the body. The steroid nucleus fulfills the optimum requirements for a chemical messenger. It is elegantly transported to all parts of the body. Like a blank key upon which can be notched various combinations, the steroid nucleus, with its specialized end groupings, enters and participates in diverse cellular activities. It is the fashioning of such keys which will permit the unlocking of individual cellular barriers that is keeping busy the best minds of the pharmaceutical industry today. Can this goal be achieved? Will steroid research pay off, and if so, will it do this within a reasonable time? Will the demand for new steroid products be large enough to support the huge investment required? Will competition be so great that the results will disappear before they are reaped? These are the questions which every research director and every executive in the industry must ask.

The situation now is in many ways comparable to that which was faced when commercial production of penicillin became a reality. Many firms asked themselves, should we go into antibiotic fermentation, or is it too late? Will penicillin be synthesized? Will new antibiotics be found? We now know the answers to these questions. We will have to make some shrewd guesses with regard to the future possibilities in the steroid field.

In order to help answer these vital questions, it might be useful to examine the history of the pharmaceutical industry's efforts to develop steroid hormone products. By examining the facts of the case to date, it may be possible to discover valuable aids to future planning.

The data upon which one may base an accurate estimate of the economic potential of hormone products are meager and contradictory. In the survey which follows, an attempt has been made to present an overall picture, by following certain pilot facts and relating them to known frames of reference. Free use has been made of available prescription surveys and sales estimates and also such sources as the Harvard Business School report on steroid hormones. The figures have been interpolated, however, wherever it was considered necessary to bring them in line with known facts.

History of Steroid Hormone Manufacture

When the first sex hormone products, urinary estrogens, were introduced, Parke-Davis was the first firm licensed under the Doisy patents for crystalline estrone. Competition in the form of non-crystalline estrogen extracts quickly developed, and many of the major firms built urine-extraction plants. Estrogenic substance and estradiol were then brought in from Hungary where Chinoin and Gedeon Richter became the first bulk producers in this field. The availability of bulk supplies led other houses into the marketing of hormone products, and the demand for bulk supplies rose sharply.

The crystalline sex steroids, testosterone and progesterone, derived synthetically from cholesterol, were first placed on the market in the 1930's by the holders of the original patents: Ciba, Schering and Organon (as Roche-Organon). These firms enjoyed a rich monopoly for almost ten years, through cross-licensing and selling at high prices.

In an effort to break this monopoly, Parke-Davis supported extensive research in the steroid field by Russell E. Marker and by the early 1940's became possessors of a considerable number of patents on methods for the manufacture of sex steroids from sources other than cholesterol. During this time, Parke-Davis and Abbott also approached the Glidden Company and succeeded in interesting them in the development of soya sterols as a source of sex hormones. The Glidden Company developed its own know-how in this field, and, with the aid of a license on an I. G. Farben patent held by Winthrop, entered the manufacture and bulk sale of progesterone.

When Parke-Davis hesitated to embark upon full-scale exploitation of his steroid processes, Russell Marker went to Mexico and, together with the firm of Hormona S. A., set up Syntex for the bulk manufacture of progesterone. Marker then left Syntex and, after an unsuccessful attempt to set up his own company, joined with Productos Gedeon Richter, S. A., to produce progesterone and desoxycorticosterone. Despite the low prices at which Mexican steroids were offered, there was at first a good deal of resistance by American pharmaceutical manufacturers, who, while anxious to compete with the hormone cartel, feared patent suits. The action of the Alien Property Custodian in seizing the Schering Corporation and the apparent inability of Parke-Davis to stop the Mexicans from violating their patents, finally opened the flood gates for the rest of the industry to the sex hormone market.

With the bulk market for steroids a reality, Schering, Ciba and Organon countered by dropping prices on their specialties and making bulk hormones available to their competitors. These companies enjoyed a strong position since both testosterone and synthetic estrone could be made more efficiently from cholesterol, and these hormones enjoyed a much wider sales than progesterone.

The scales were finally tipped, however, when in 1950 the Mexicans were able to undertake massive production of steroids first for pregnenolone (as a potential anti-arthritic) and then for progesterone and Compound S (as cortisone-starting materials). Whereas the annual production of sex steroids for the entire world had amounted to less than two tons, the Mexicans started to produce this amount monthly. The cost of the basic

(Continued on page 851)

Pressurized Cream Patent In Court

by Thomas Cifelli, Jr., PATENT ATTORNEY

GAYLOR, CIFELLI & JURICK
NEWARK, NEW JERSEY

On the very day that the U. S. Patent Office issued U. S. 2,655,480, covering pressurized compositions in suitable containers for shaving, shampooing, etc., a suit was brought in the Federal Court in Baltimore by Carter Products, Inc., Joseph G. Spitzer and Marvin Small, against Colgate, Noxzema, Stalfort Pressure-Pak, J. C. Stalfort & Son and Read Drug & Chemical Company, for unfair competition and infringement of the patent.

In view of the fact that pressure-packed cosmetics have already attained great importance and Carter, according to a press notice, feels that the patent in question gives it exclusive rights for the production of pressurized shaving creams, it takes no seer to realize the practical impact of the patent in question in the cosmetics field.

Accordingly, it is believed that a review of the technical situation appears to be in order. Of course, since the patent is presently involved in litigation no opinions will be given, either expressly or by implication.

Perhaps a chronological recitation of the story as alleged in the complaint, will be of general interest.

It is alleged that Spitzer and Small were partners and that Spitzer conceived certain trade secrets relating to pressurized lather compositions and disclosed them to Small. In developing these trade secrets Spitzer and Small engaged Foster D. Snell, Inc. to assist in the job. The latter designated two of its chemists, Fine and Reich, to work on the project. From this arrangement there were developed additional trade secrets and the findings upon which the patent in suit was based.

The patent is owned jointly by Spitzer and Small and Carter Products has an exclusive license thereunder in the drug, pharmaceutical, cosmetic and toilet goods field.

Some three years ago, it appears that Fine became employed by Colgate and obtained a patent in South Africa, No. 136/52 on or about January 17, 1952,

allegedly covering the trade secrets previously noted.

As matters stand now, the defendants have until January 2, 1954, within which to file their answer.

The Patent

The inventors assert that they have made an improved composition for forming soap or synthetic detergent lather of fine quality without the use of a brush or any mechanical whipping mechanism or operation. They point out that preparations previously employed to produce lather for shaving, shampooing, etc. required a whipping up of the composition into lather, usually by means of a brush. They state that this lathering operation was time consuming and somewhat inconvenient, and consequently brushless creams were introduced to get around these shortcomings.

Regarding brushless creams, the inventors note the rather well known weaknesses of these. It is pointed out for example that these creams are somewhat greasy or salve-like and adhere to the skin and other surfaces such as razors and cause the clogging of drains.

The composition developed by the inventors comprises a water solution of a suitable soap or like detergent in a highly volatile organic liquid called a propellant. The patent states that a substantial proportion of the propellant is insoluble in the soap solution, the contents being maintained in a pressure-tight container under sufficient pressure so that the insoluble portion of the propellant is in liquid phase, existing as droplets or in the form of a liquid-liquid emulsion, in the soap solution. Upon release of the valve the pressure on the composition is also released as the composition emerges from the container with the result that a fine textured creamy lather is produced. The inventors surmise that the volatile propellant liquid, entrapped as an emulsion within the liquid soap solution, vaporizes upon the release of pressure, forming fine gas cells throughout the liquid soap solution and thus forming it into a lather.

The inventors then proceed to give a wealth of technical information which indicates that a considerable amount of experimental work must have proceeded the filing of the patent application.

As suitable soaps are mentioned the soluble stearate soaps, such as the potassium, ammonium and soluble amine soaps of commercial stearic acid, particularly the triethanolamine and morpholine soaps. The vegetable oil soaps, including the soaps of cocoanut oil, cottonseed oil, olive oil, soya oil may be used either alone or in admixture with the soluble stearate soaps. If the vegetable oil soaps are used alone or as the main soap ingredient the inventors say that the resultant lather is somewhat looser, coarser and less stable then when soluble stearate soaps or mixtures including a large proportion thereof are employed. For this reason, the patent suggests that when the composition is to be used for producing shaving lather a substantial proportion of soluble stearate soap is used, whereas compositions for shampoo or washing lathers preferably contain a substantial proportion of vegetable oil soaps. Also, vegetable oil soaps are helpful in admixture with the soluble stearate acid soaps for producing a product less likely to gel at low temperatures. For producing shaving lather amounts above 30 per cent, preferably from 60 to 100 per cent of soluble stearate soap, are suggested.

When relatively loose or coarse lathers are satisfactory, certain synthetic surface-active agents may be employed as the soap ingredient. Anionic and non-ionic wetting agents should be employed for this purpose. Examples of such agents given in the patent are triethanolamine, lauryl sulfate, sodium lauryl sulfate, sodium dodecyl benzene sulfonate, and water soluble polyoxyethylene ethers of alkyl substituted phenols. These wetting agents may also be employed to avoid an oily residue on the skin and in order to facilitate rinsing off the lather. When thus used the wetting agent should be employed in relatively small proportions, preferably from about ½ per cent to about five or six per cent by weight.

While the amount of soap is not critical the inventors prefer from about five to about 18 per cent by weight of the soap and water solution. It is generally preferred to add a small percentage of glycerine (about five per cent by weight based on the soap solution) in order to increase the stability of the latter.

The propellants suggested for use are the relatively insoluble, unsaturated aliphatic hydrocarbons and relatively insoluble partially fluorinated and partially or wholly chlorfluorinated hydrocarbons having vapor pressures within the range from about five to about 300 pounds per square inch gauge, and preferably from about 30 to 80 pounds per square inch gauge at 70° F. The disadvantage of the saturated aliphatic hydrocarbons is their inflammability. The most desirable propellants for lather are the substantially water insoluble chlorine- and fluorine-substituted hydrocarbons such as the following:

1,2, dichlor 1,1,2,2 tetrafluorethane ($CClF_2CClF_2$).
Trichlortrifluorethane ($C_2Cl_3F_3$).
Dichlordifluormethane (CCl_2F_2).
Monochlordifluormethane ($CHClF_2$).
Monofluortrichlormethane ($CFCl_3$).
1,1, difluorethane ($CH_3.CHF_2$).
1 monochlor 1,1 Difluorethane ($CClF_2.CH_3$).

The inventors say that absence of tingling sensation combined with production of the best shaving lather consistency is achieved by using as propellants those derivatives in which all of the hydrogen atoms are replaced by chlorine and fluorine and in which the number of fluorine atoms equals or exceeds the number of chlorine atoms, as is true, for example, of dichlordifluormethane, 1,2, dichlor 1,1,2,2 tetrafluorethane, and trichlortrifluorethane.

In order to reduce the vapor pressure without the use of low vapor pressure propellants and without destroying the lather-producing properties of the composition, the inventors suggest the addition of a small

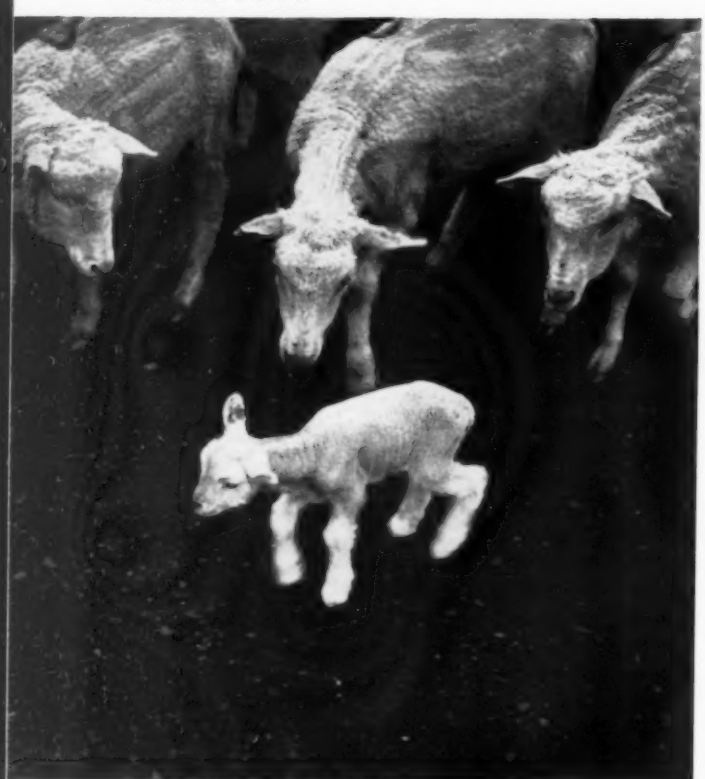
(Continued on page 823)

Cholesterol

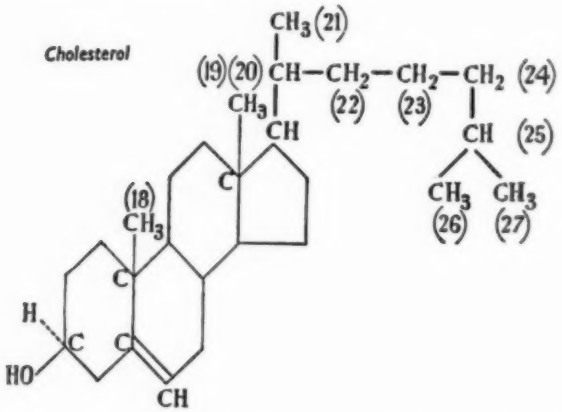
by Edgar S. Lower
TECHNICAL ADVISER, CRODA INCORPORATED

part one: Manufacture and Properties

EWING GALLOWAY PHOTO



Cholesterol is an optically active unsaturated monohydric waxy alcohol having an eight-carbon atom side chain which is completely saturated, a double bond at the 5 position and a hydroxyl group at position 3, as illustrated below. It is these three characteristic features of the molecule which give it the properties it exhibits and it is the alteration of these which lead to its differing physiological behaviour.



It is found in the unsaponifiable portion of oils, fats and waxes, being characteristic of animal oils and fats, and in an esterified form it makes up the major portion of wool fat unsaponifiables. It occurs also in the gall stones, bile, brain, blood, nerve tissues, spinal cord, suprarenal glands and fish liver oils; whilst in egg yolk there is a particularly rich content.

It is possibly true to say that in Great Britain the bulk of cholesterol supplies is prepared from the wool-fat derivative, wool-wax alcohols, which constitute the major portion of the unsaponifiable portion of wool fat.

In one of the more recent processes for the making of cholesterol from wool fat, the non-cholesterol materials, agnosterol and lanosterol, are separated out of previously prepared wool-wax alcohol by means of crytallization from a mixture of benzene and methanol, and the remaining wax-like impurities are removed by selective crystallization from acetic acid at 30-35 °C.

A further modern method utilizes the knowledge that cholesterol will form loose addition compounds with many other chemicals e.g. ethanol, methanol, benzene, water, aldoximes, ketoximes and di-alkyl ketoximes, perchloric acid, hexafluorphosphoric acid, calcium chloride, lithium and manganese chlorides, lecithin, cetyl alcohol, glyceryl monostearate, isopropyl alcohol, isobutyl alcohol, amyl alcohol and furfuraldehyde.

In this process the wool-wax alcohols are dissolved in ethyl alcohol and to this solution is added an ethyl-alcohol solution of calcium chloride, and the mixture allowed to stand for 24 hours at room temperature. Acetone is added and the resultant precipitate separated.

The precipitated compound is then decomposed by

addition to water. Succinic acid may be utilized in the same manner as the calcium chloride.

A further important method of manufacture utilizes the formation of cholesterol-loose compounds with oxalic acid. The wool-wax alcohols are dissolved in ethylene dichloride and to this solution is added oxalic acid. After overnight standing the oxalic acid compound can be filtered away and split into the sterol and oxalic acid simply by treatment with water.

Urea is a newer chemical now utilized for the making of cholesterol from wool-wax alcohols, also via the loose compounds it forms with sterol. It also is separated from the cholesterol by simple treatment with water.

A further process of cholesterol manufacture utilizes the easy formation of cholesterol hydrochloride. In this method the same material, wool-wax alcohols, is dissolved in ethylene dichloride and cooled to 10°C. Gaseous hydrochloric acid is then passed through the solution, forming the cholesterol hydrochloride which precipitates and can be filtered away. The hydrochlorides of agnosterol and lanosterol are separated by further crystallization from ethylene dichloride, and the cholesterol hydrochloride is decomposed to liberate the cholesterol, by treatment with caustic soda.

Cholesterol can be prepared from wool-wax alcohols by first extracting the triterpenols, agnosterol and lanosterol, via hot methanol in which they are sparingly soluble. The crude cholesterol is then precipitated from the methanol on cooling. The material is then dissolved in ethyl acetate from which aliphatic alcohols first separate, followed by cholesterol.

The now well-known Solexol process has also been utilized for the preparation of cholesterol from wool grease. This procedure consists of dissolving the material in a solvent under pressure, then gradually releasing the pressure when selective precipitation of the various wool-grease components takes place.

Chromatography has also been suggested as a method of manufacture, particularly from liver oils.

In preparing the sterol from spinal cord, the material is first saponified by means of lime in an autoclave. The saponified mass is then extracted with ethylene dichloride which dissolves the cholesterol. The solution is cooled to remove non-cholesterol materials and finally distilled to recover the cholesterol.

An alternative to the latter process is simple extraction of the cholesterol with ethylene dichloride without previous saponification of the cord. A further process utilizes extraction by ethylene dichloride on a continuous extractor.

Cholesterol can be prepared from brain tissue by mixing this with anhydrous calcium sulphate, powdering the hard mass, extracting it with ether and purifying the crude cholesterol. Sodium dihydroabietate and saponin can liberate protein-bound cholesterol from serum and make it extractable with ether.

If cholesterol is crystallized from solvents containing water, it takes up one molecule of water of crystallization but gradually loses this on exposure to air or on warming. [111]

The crystalline form of cholesterol depends a lot, of course, on the solvent from which it is crystallized, but when crystallized from absolute alcohol it gives plate-like crystals of rhombic form and of the tri-clinic system. [150]

It is a substance which can be distilled unchanged in vacuo, and sublimed under ordinary pressure at 200°C. but is decomposed at high temperatures. For instance, hydrogen is evolved from impure cholesterol at 300-320°C. in the presence of catalysts it contains naturally. On heating for an hour at 350°C. a product of strong dextro-rotation results.

If the material is exposed to bright sunlight, particularly to wave lengths of the order of 2260-3350A for a time, in the presence of air or oxygen, it will become photo-active, emitting wave lengths of 3533-3572A producing ionization of the surrounding air.

It turns yellow, becomes resinous, amorphous and granular and ceases to give its characteristic color reaction with sulfuric acid—acetic anhydride, and has different solubility characteristics in its diminished solubility in ether and increased solubility in ethyl alcohol and acetone. [36]

The melting point is reduced from 140-110°C., as is its specific rotation and molecular weight, from 386-268. The modified material may contain hydroxy-cholesterol. Cholesterol esters are also affected by irradiation. Filtered ultra-violet light of wave length 336 mm. does not affect cholesterol.

Cholesterol is not affected by exposure to sunlight if it is stored in sealed containers in an atmosphere of carbon dioxide.

From a layer of cholesterol irradiated on a glass plate by ultra-violet light, the three products, a hydroxycholesterol, a 7-hydroxycholesterol and a △-4-cholesterol-3-diol are obtained. [194]

Irradiation of cholesterol by X-rays leads to the formulation of derivatives which have been found to include cholestane-3B,5a,6B-triol, 3B-hydroxycholest-5-ene-7-one. [186]

It has been found that when cholesterol is heated with floridin bleaching earth in carbon tetrachloride, it is first converted into an ether, and on further heating is polymerized to a resinous product.[2] When solutions of cholesterol in toluene are refluxed with this activated earth, they also become resinous and fluorescent.[3]

Some chemical and physical test results which have appeared in the literature on pure cholesterol are set out below:

Test	Results
Formula	$C_{27}H_{44}O$
Molecular weight	386.64
Ash	Negligible
Acetyl Value	135.5
Bromine thermal test (after 2 mins.)	7.38°C.
Dielectric constant	5.4
Iodine Value	68.3
Molecular weight	386
Melting Point	145/8°
Specific Gravity	1.052-1.053
Specific Optical rotation in Chloroform	(@) 20/D — 31.61°
Specific Optical rotation in ether	(@) 20/D — 31.22°
Volatile Matter	Negligible

(*Continued on page 836*)

Present Status of FDA Factory Inspection*

By Arthur D. Herrick

* Delivered at the Parenteral Drug Association Annual Meeting, October 28, 1953, Hotel Barbizon-Plaza, New York.

Factory inspection under the Federal Food, Drug and Cosmetic Act has always been a source of confusion and misunderstanding for the average drug manufacturer.

Part of this confusion is due to the innate inability of the average layman to cope with the fine draftsmanship of the framers of the statute. But to even a greater degree it can be charged to the Food and Drug Administration itself which, over the course of the years, deliberately encouraged this misunderstanding by wilfully applying an interpretation of the provision at considerable variance to its expressed terms.

The result of all this has been that today very few people have a clear-cut definitive concept as to precisely what their obligations—and rights—actually are under this section of the law. Or perhaps it may be more accurate to acknowledge that they do know their rights but hesitate to act on this knowledge when confronted with the bland demands of an inspector who is undoubtedly instructed to make as thorough an investigation as he is able to. All too often these inspections take on resemblance to a poker game in which the manufacturer is bluffed out of his rights.

The Food and Drug Administration, which in almost every other instance is cooperative and correct in its dealings with the manufacturer, seems to have fostered this misunderstanding in the sincere belief that it needs wide and unbridled inspection rights to enforce the statute properly. The open sesame it seeks to records, formulas, personnel, complaint files and other documents obviously simplifies its task of enforcement by furnishing leads of possible violations which may then be followed up.

Regardless of its good intentions and objectives, it must be emphasized that its authority is founded on an act of Congress, which has in two instances now refused to allot these powers to it.

If we consider factory inspections historically we find that the previous Food and Drug Act of 1906 gave no authority for compulsory factory inspection. A system of voluntary inspection, however, originated early and continued during the entire operation of the statute. Inspections were conducted more on a corrective basis than a punitive one. Little effort was made to gather evidence of violations. The government found that it was frequently refused entrance particularly where there was reason to hide certain activities. Often inspectors had to maintain a 24-hour watch to intercept shipments from a suspected plant.

In drafting the present statute the government sought and obtained statutory authority to make factory inspections in Section 704 of the law. But it is both interesting and significant to note that it originally wrote into the law the right to inspect—in addition to materials and labeling—"methods" and "processes." These terms brought such a volume of objections from industry—which feared it would result in the disclosure of valuable *trade* secrets and processes of manufacture—that they were quietly dropped from the subsequent

drafts of the statute.

Congress thus made it clear that it did not intend factory inspection to include an examination of methods and processes, in other words, formulas, working records and similar documents. But Food and Drug inspectors calmly went on asking for these records, giving the impression by their conduct that they were entitled to those data. Efforts to have the Administration limit or cancel its instructions to inspectors were without avail. To all intents and purposes, these inspectors operated as though Congress had given them this authority. Is it any reason that the manufacturer soon accepted this alleged right to review all records in the plant?

As a matter of fact, manufacturers are, almost without exception, law-abiding citizens. Inspectors soon learned to play upon the natural reaction that a man who has nothing to hide hides nothing. They learned to imply that refusal to open all records to thir scrutiny was an admission of guilt, an admission that all sorts of violations were being withheld from them.

Under our system of laws there are, however, certain rights of privacy that are protected by the Constitution, that indeed serve as the bulwark of our liberties. Certainly there is no reflection on the character or guilt of a defendant because of his refusal to testify in a criminal case. Every citizen has the right to refuse admission in his home to a policeman without a warrant. These privileges of democracy, if breached by the police and courts with impunity, will eventually mean the end of all our liberties.

By the same token, the drug manufacturer has the right—indeed, the obligation—to refuse inspection not explicitly authorized by law. To do otherwise means only to sacrifice the safeguards of liberty that surround our democracy. No one need be ashamed or embarrassed to say "No" under these circumstances.

Too many manufacturers, however, were ashamed, were embarrassed. And little by little their rights to maintain these records as confidential were being taken from them. It is not too much to say that had it not been for the Cardiff case a body of court precedent slowly being built up would sooner or later have given the Food and Drug Administration the authority it had unwarrantly assumed.

There is no need to review the facts of the Cardiff case or to recount the Supreme Court decision in validating all factory inspection. The Food and Drug Administration moved swiftly to remedy this defect in its authority. Industry, to its credit, wholeheartedly supported its efforts—perhaps a little too hastily and a little too enthusiastically in the opinion of some observers, who felt the occasion had arrived to clarify once and for all the inspection powers of the Food and Drug Administration.

But by and large, industry did not take advantage of an unseated adversary; on the contrary it hastened to restore its sword. It will be interesting to see whether the Food and Drug Administration will show its appreciation of this cooperation by its future actions in this regard. I for one am confident it will.

By Public Law 217, approved August 7, 1953, Section 704 was amended to restore enforceable factory inspection rights to the Food and Drug Administration. Not only did the amendment cure the defect found by the Supreme Court but it particularized the procedure in greater detail.

Briefly, the law now provides that the Food and Drug Administration has the mandatory factory inspection it always assumed it had. Besides granting such enforceable factory inspection, the following provisions have been made:

1. The inspector must present both written notice and credentials to the plant owner, operator, or "agent in charge," not merely to a "custodian."
2. A separate notice must be given for each inspection, but a notice is not required for each entry made during the period covered by the inspection.
3. The inspector must provide the plant with a copy of his written report showing any *sanitary* violations before he leaves the premises at the completion of the inspection.
4. A written receipt must be given to the plant owner for any sample taken from the factory. Should a laboratory analysis be made, the owner should receive a copy of the report.
5. Inspectors' reports or government analyses cannot be used in advertising, labeling, or other sales promotion material.

More important than this, however, Congress made clear that factory inspection does *not* encompass the individual to whom the inspector presented the (1) formula records, (2) complaint files, and (3) personnel records. This of course is not new. As I have indicated, the identical limitation was implicit in the original section but was wrapped in a deliberately created fog of confusion.

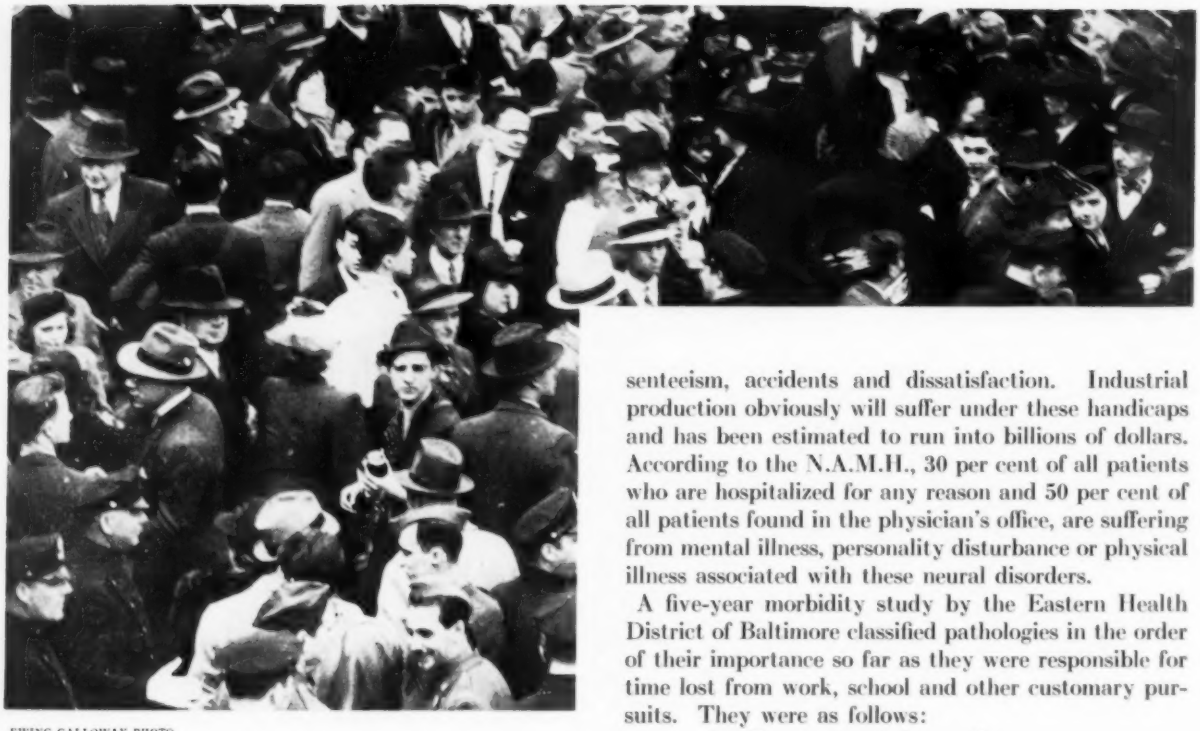
In a release issued on August 27, 1953, Commissioner Crawford told how FDA planned to put into effect the new provision. Inspectors will give written notice of intention to inspect at the time they present their credentials to the plant operator, giving the date, time of day, name of inspector and his district office, and the name and address of the plant. Inspectors, moreover, will leave written reports on conditions or practices which indicate that products contain filth or decomposition or have been prepared or held under unsanitary conditions. These reports will be left with the individual to whom the inspector presented the notice of inspection or another responsible official. In addition, inspectors will give written receipts for all samples taken during an inspection.

Commissioner Crawford made it clear that he recognized that some phases of these inspections were mandatory and others, voluntary.

He stated:

"Modern production and distribution are carried on to a large extent through the medium of written instructions and records. The legislative history indicates Congress did not intend to include prescription files,

(*Continued on page 840*)



EWING GALLOWAY PHOTO

Mass Neurosis

by L. Stambovsky

The prevalence of nervous disease in America has never been fully probed. Estimates have been advanced, but they cover only full-blown clinical neuropathology. National Association for Mental Health[1] is of the opinion that this type of disease is America's number-one health problem. It states that at least nine million Americans suffer from this disorder in its various forms and manifestations, which are many. They also point out that there are currently 650,000 people in mental hospitals—as many as in all other hospitals put together. Mental and emotional illness costs the taxpayer one billion dollars annually for treatment. The N.A.M.H. goes on to say that one out of every four workers has a personality disorder adversely affecting his efficiency and safety; which is also instrumental in the production of alcoholism, absenteeism, accidents and dissatisfaction. Industrial production obviously will suffer under these handicaps and has been estimated to run into billions of dollars. According to the N.A.M.H., 30 per cent of all patients who are hospitalized for any reason and 50 per cent of all patients found in the physician's office, are suffering from mental illness, personality disturbance or physical illness associated with these neural disorders.

A five-year morbidity study by the Eastern Health District of Baltimore classified pathologies in the order of their importance so far as they were responsible for time lost from work, school and other customary pursuits. They were as follows:

1. Heart, except rheumatic.
2. Psychosis.
3. Arthritis.
4. Acute Nasopharyngitis.
5. Bronchitis.
6. TB.
7. Accidents.
8. Rheumatic Fever, Rheumatic Heart.
9. Influenza.
10. Hypertension.
11. Vascular Disease.
12. Nephritis.

A full digest of these findings revealed that psychoses achieved second place in the ranks of disabling pathologies both in the frequency of occurrence and duration of incapacitation of each case so affected. Nervous disease being second as a cause of disability, is therefore also second in economic drain upon the patient, family and society.

The Baltimore and the N.A.M.H. investigations covered only clinical cases or those of sufficient severity to force withdrawal from normal activity and to seek medical aid. They did not encompass border-line or sub-clinical neurasthenics of which there are many millions. That such is fact will become apparent after the presentation of supporting statistical information. The level of nervous disease, clinical and sub-clinical, can best be appraised by the determination of the amount of sedatives and hypnotics consumed. The figures given below, constitute absolute proof that we have millions of persons in America suffering from restlessness, irritability, anxiety, depression, loss of interest, insomnia, hypochondriasis, fatigue, loss of memory, difficulty of concentration, personality changes and

finally, mental and physical inadequacy. The United States Tariff Commission reports that in 1950, 499,100 lbs. of barbituric acid went into the manufacture of phenobarbital and other barbiturates employed as sedatives and hypnotics. Accepting one-half grain as the average dose, this production is equivalent to 6,987,400,000 individual doses. In 1951 the output dropped to 481,000 lbs. or 6,734,000,000 doses at one-half grain per dose. The last survey, 1952, showed somewhat of a drop, 418,000 lbs., which translated into individual doses becomes 5,852,000,000. The decline between 1950 and 1952 is interesting—amounting to 81,000 lbs. or 1,135,400,000 doses. It should not be misinterpreted as a sign of an improvement of our mental-health picture, but rather it is attributable to the more rigid enforcement of the laws governing the distribution of these drugs. Illegal sales have been stopped by virtue of extremely heavy penalties if caught. The Durham-Humphrey law has been a powerful tool in the reduction of unauthorized procurement and usage of these drugs. Heretofore a prescription for a barbiturate could be refilled forever. Today, thanks to the Durham-Humphrey bill, refills can not be obtained without authorization of the physician.

To further substantiate the magnitude of our sedative and hypnotic consumption, we repeat a summation of investigations conducted by Arthur D. Little, Inc.—an organization of highly qualified engineers and chemists. They found that at the manufacturers' level the sale of barbiturates amounted to $35,000,000. The pharmacist can purchase phenobarbital tablets, one-half grain, for as low as 75 cents per thousand. Nembutal, probably the most expensive derivative, costs about $8.00 per thousand, one-half grain size. Striking an average between these two prices, 35 million dollars will purchase roughly in the neighborhood of nine billion doses. This seems in excess of the U. S. Tariff Commission data and certainly adds stature to same. In 1952, 38 million new prescriptions were written for barbiturates, which is approximately 10 per cent of all new prescriptions. Also 33 per cent of all refills were for sedatives or hypnotics.

There are a number of other compounds with sedative and hypnotic properties not thus far mentioned. They are the bromides and chloral hydrate—both much older than the barbiturates and much less popular. However their employment is still formidable as may be gathered from the following production[2] data: output for 1949 of sodium bromide was 628,128 lbs.; potassium bromide, 1,293,307 lbs.; ammonium bromide, 216,075 lbs. Total bromide manufactured, 2,137,510 lbs. The writer was unable to ascertain how much of this went into medicinal use inasmuch as the photographic industry absorbs large quantities of these chemicals. Since the bromides are the only drug with sedative action which may be purchased over-the-counter without restraint or restriction, it is safe to assume that annual individual doses must again run into at least a billion. "Chloral" or chloral hydrate production was 8,711,000 lbs. in 1949. The average dose can be between 3 and 15 grains, which means the above poundage would yield over four billion individual doses.

Combining all the figures for sedative and hypnotic consumption, the barbiturates six to nine billion doses; the bromides, at least one billion doses; last but not least, chloral hydrate, four billion doses; the total reaches not less than 10 billion individual doses per year. These are truly astronomical figures; yet, this is the quantity of drugs found necessary to alleviate the neuropathology in America. The writer does not claim the foregoing estimates to be free of some error and is cognizant of potentials capable of introducing same. It is possible that export may have funneled off appreciable amounts of our hypnotic production. On the other hand, with the resurgence of the European chemical industry, such quantities are probably negligible. Pre- and post-operative care, veterinary medicine, the control of epilepsy and full-blown mental disease also drew substantially upon the supply. Viewed from all angles it is entirely likely that the major portion of our sedative and hypnotic output went into the symptomatic treatment of chronic, low-grade mental illness.

Another American phenomenon which testifies to the existence of wholesale emotional and mental disbalance is the colossal tobacco industry. This country consumed 395 billion cigarettes, six billion cigars and considerable quantities of smoking tobacco—all within one year—in 1952. These incredible figures serve to amplify and support the neurologic picture exposed by our huge sedative and hypnotic requirements. Such is fact inasmuch as smoking is a nervous manifestation. No significance can be attached to smoking several or more cigarettes daily; but when this number is increased to 30 or 40 daily, then we have irrefutable evidence that all is not well. Nicotine is a feeble sedative. Any immediate pharmacologic action is inconsequential so far as the motivation of smoking is concerned. The effects are psychologic rather than pharmacologic. There is a physical and mental occupation in the act of smoking, which fills the void or calms the turmoil of restlessness. Holding a cigarette and puffing and exhaling gives the smoker something to do, filling a vacuum or displacing disturbances in the neural switchboard. There can be little contest denying the interrelationship between our neurologic status and tobacco consumption.

Sedation requiring billions of doses of various drugs represents a tidal wave of disturbed and unhappy people. Without organic signs of disease, these persons constitute a perplexing problem for the physician. Accustomed to tangible pathology, and in most instances finding no sign of same, he has no alternative but to provide relief by sedation. Such treatment is merely symptomatic in its scope and is continued for long and indefinite periods. Vast neurologic degeneration such as we have outlined exerts a "chain-reaction" effect—subtle, far reaching, intangible. To cite one of the more tragic repercussions, we have but to point out our highway slaughter. Certainly not every motor accident

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Absorption Bases

by Milton A. Lesser

Since their introduction some forty years ago, the absorption bases have assumed important roles in the production of dermatologic ointments and cosmetic creams. Their present status is reflected, not only by the number of such bases now on the market, but also by the continued research that goes into the formulation of these materials to improve their properties and widen their range of utility.

Absorption bases have found many uses in pharmacy and cosmetology because of their many advantageous qualities. Primarily, absorption bases have become of great importance because of their ability to emulsify considerable quantities of water or aqueous medications.[1,2] Indeed, the word "absorption" refers to the water-absorbing or emulsifying properties of these bases and not necessarily to their action when applied to the skin. These bases are generally provided in an anhydrous form and are capable of absorbing several times their weight of water, while still retaining their ointment or cream-like consistency.

As recently remarked by Hembrough,[3] the amount of water present in absorption base creams has a notable effect on these products; influencing both consistency and color. According to this worker, the greater the amount of water present, the more stable and white is the resulting cream; heat stability also being improved simultaneously. Of course, the water content must be kept within the capabilities of the base and this level should not be exceeded where products must stand up under long storage periods. Agreeing with Lower,[4] Hembrough says that the water concentration should be below 65 per cent of the finished emulsion, as a general rule.

It is pointed out by Lower,[4] an authority in the field, that emulsions made with absorption bases should be capable of serving as vehicles for a wide variety of chemical substances, especially acids, electrolytes and metallic salts. However, it is well known that the inclusion of soaps and alkalis in these bases may result in instability and produce polyphase emulsions. Lower also observes that absorption bases are valuable for imparting emollient properties to certain types of cosmetics which normally would not possess this desirable quality.

As summarized by Hembrough, there are certain essential characteristics that a successful absorption base must possess. The first and most important property is its ability to absorb large quantities of water. The subsequent water-in-oil emulsions should be of "unquestionable" stability not only to extremes of climate but also to variations of pH and electrolytes. In addition, they must be neutral, of good color and proper consistency and should retain such characteristics as absence of odor and freedom from rancidity.

Essentially, absorption bases consist of a water-in-oil emulsifier in petrolatum, with perhaps other ingredients added to provide certain desired characteristics.

Lanolin has long been used as the emulsifying material in such products. Although lanolin finds important uses in the formulation of absorption bases, its function as an emulsifier has been taken over, to a large extent, by other substances. Most modern bases make use of certain purified fractions of wool fat, such as cholesterol, oxycholesterol and their esters as well as other lanolin derivatives.[5] Also coming into use during recent years are absorption bases made with emulsifiers that are not related to lanolin.

Various methods have been suggested for classifying absorption bases. For example, these products may be grouped on the basis of their major components. Thus, according to one of the older systems,[6] the bases may be divided into two main classes. The first type generally consists of a lanolin isolate in a mixture of hydrocarbons, while the second type includes products containing a lanolin derivative in hydrocarbons plus lanolin. A more modern classification would include, of course, a group based on the newer, non-lanolin emulsifiers. Lower[4] uses a different system; dividing absorption bases into two main groups according to their consistencies. In his system, type A bases are the semi-fluid viscous masses, with type B bases comprising semi-solid or waxy products.

A rather convenient classification, and one that permits more detailed discussion, can be based on the chief emulsifying agent in the absorption bases. These include lanolin, wool-wax alcohols, cholesterol, cholesterol esters, and the non-lanolin derived emulsifiers, such as the esters of polyhydric alcohols.

Since it was the first material used to make absorption bases and because it is a source of many of the emulsifiers now in use, lanolin warrants more than passing consideration. Aside from its action as an emulsifying agent, lanolin has a valued place in absorption bases because of its ability to impart emollient properties to the resulting creams and ointments. It is for the latter effect that lanolin is often included in these bases, with other substances imparting the water-absorbing action. In addition, lanolin has useful penetrating properties. It is therefore a valued adjunct to heighten the absorption of active medicaments from ointments into the skin.[3]

Nonetheless, lanolin still finds use as an emulsifier in modern absorption bases. In such cases, other materials are generally included to improve the properties of the mixture. A case in point is the following formula[7] for an absorption base in which increased water-holding properties are made possible through the use of an auxiliary emulsifier:

Sorbitan sesquioleate (Arlacel 83*)	**6.0 per cent**
Ceresin wax	**15.0 " "**
Petrolatum	**24.0 " "**
Mineral oil	**45.0 " "**
Lanolin	**10.0 " "**

*Atlas Powder Co., Wilmington, Del.

Changes in the consistency of the above base may be made, as required, by altering the petrolatum and mineral-oil ratio. If desired, beeswax or paraffin wax may replace the ceresin wax.

Years ago it was realized that lanolin itself was not the ideal emulsifier for making absorption bases. It was recognized that it had certain disadvantages, such as odor, a tendency to cause stickiness, and a drying of the surface of creams and ointments.[3,4] More recently, several investigators[8,9,10,11] have reported that some people are sensitive to lanolin. This has further curtailed the use of lanolin, as such, in certain absorption bases and dermatologic ointments.[12]

Sensitivity is also associated in some cases with the mixed alcohols obtained from lanolin.[10,11] These materials, commonly referred to as wool-fat alcohols or more properly as wool-wax alcohols, have replaced lanolin in some applications, including various absorption bases. As remarked by Peel,[13] the advantages of lanolin are concentrated in its alcoholic portion. Hence, this part is generally separated from the fatty acids by alkali hydrolysis, distillation or extraction.

Removal of the fatty acids eliminates the stickiness or tackiness commonly observed in lanolin emulsions.[14] It was also found[1] that the emulsions formed with the wool-wax alcohols are preferable to those made with lanolin because they do not darken on the surface, and no objectionable odor is detectable in hot weather.

It was realized quite early that the alcohols obtained from lanolin also possessed the advantage of having increased water-absorbing capacities.[3] In 1923, Lifschutz[15] pointed out that the water-absorptive property of lanolin is due to the presence of from three to eight per cent of free alcohols. At that time he recommended the use of a mixture of three per cent of these alcohols with petrolatum as an ointment base that will absorb from 300 to 400 per cent of water.

Much more recently, in 1952, Tiedt and Truter[16] investigated the emulsifying properties of lanolin and its components. Their results indicate that the esters of wool fat are incapable of forming emulsions by themselves, and that the ability to hold water in the form of a water-in-oil emulsion is due, almost entirely, to the free-alcohol content.

The superior emulsifying properties of the mixed wool-wax alcohols is one of the main reasons for their admission to the British Pharmacopoeia. The wool alcohols form effective absorption bases when blended with hydrocarbons, including white mineral oil (liquid petrolatum), petrolatum and paraffin. An example of such a base is given in the official British text. Thus the Sixth Addendum to the B.P. provides a formula for an ointment of wool alcohols which, when converted to American (U.S.P.) equivalents, is as follows.

Wool alcohols	**60.0 Gm.**
Paraffin	**240.0 Gm.**
Petrolatum, white or yellow	**100.0 Gm.**
Liquid petrolatum	**600.0**

The hydrous ointment is made by incorporating an equal quantity of water into this base. As remarked by

(Continued on page 845)

COURTESY TUSSY COSMETIQUE

Hair Rinses

by Harry Hilfer

Hair rinses had their origin as an adjunct to the shampooing of the hair. In hard water areas, particularly, a calcium soap residue would form around the hair causing it to appear rather dull and lusterless. Women soon found that if the hair were treated with the most convenient household acid—usually vinegar—the film would be dissolved, and this would enhance the luster of the hair. The preparations which were manufactured to cope with this problem substituted other acids—which were odorless—for vinegar and performed this function just as well. The agencies in most general use were citric and tartaric acids, and they are in use even now.

In due course rinses, in addition to their primary functions of removing the soap film, had additional functions incorporated in them. The most important of these was the incorporation of dyes to tint the hair to a desirable shade or to hide, to a certain extent,

any gray hairs that may have appeared. These dyes may be chosen from a large group of certified colors, which are capable of being fixed to protein materials (such as hair) from a weakly acidic solution. Since the rinse itself must be acid, colors from this group used in conjunction with the rinse will also tint the hair.

These colors must be chosen very carefully since no single one of them—with the possible exception of the black—will itself color the hair a desirable shade. Since mixtures must be used, the problems presented would seem to be a choice of dyes which color equally as well and which, when washed off with soap or other detergent, will be removed equally as well. The dyes, however, vary greatly in their ability to be absorbed by the hair and also vary in their ability to be removed. The first problem may be overcome by varying the proportions with the ability of the colors to be absorbed, but the removal problem may be solved only by avoiding those dyes which are removed with difficulty. The reason for this is that repetitious washings and rinses will in time cause the hair to become the color of the residual hue left after washing.

The colors usually used for this purpose are the so-called "acid dyes," though not all dyes of this category are suitable. It is only that segment of the "acid dyes" soluble in acidic solution. Dyestuffs such as eosin are also known as acid dyes but are not suitable because of their relative insolubility in an acidic pH. Actually the "acid dyes" used are limited to those containing a solubilizing sulfonic group. The so-called "basic dyes" are probably good potential dyes to be used for basic tinting but are incompatible with the "acid dyes," and since there are only four of these basic dyes on the certified list the achievement of proper shades becomes difficult. The rinses are usually marketed as crystals of the acid employed, coated with the dyestuffs, or as concentrated solutions which are diluted before use with the crystals, probably enjoying greater popularity for home use.

With the advent of the home permanent wave, a newer type of rinse has reached the market and probably enjoys a greater popularity than the old acidic type of rinse. The cream hair rinse as it is commonly known depends on a quaternary ammonium compound with an acidic pH to serve its function.

The home permanent wave, with all its advantages, also had a tendency towards making the hair feel dry and harsh to the touch. Though this has been overcome to a large extent by the more recent innovations in waving formulations, a strong need was felt for a preparation which would overcome this defect after the home permanent had been administered. Many of the quaternary ammonium compounds have served this function admirably, because of their substantivity to the protein molecule, to begin with, and because the coatings they leave on the hair feel pleasant to the touch. The fact that the rinse is itself an acidic pH also makes them good agencies for use in the removal of the calcium soap film—the original purpose of the rinse.

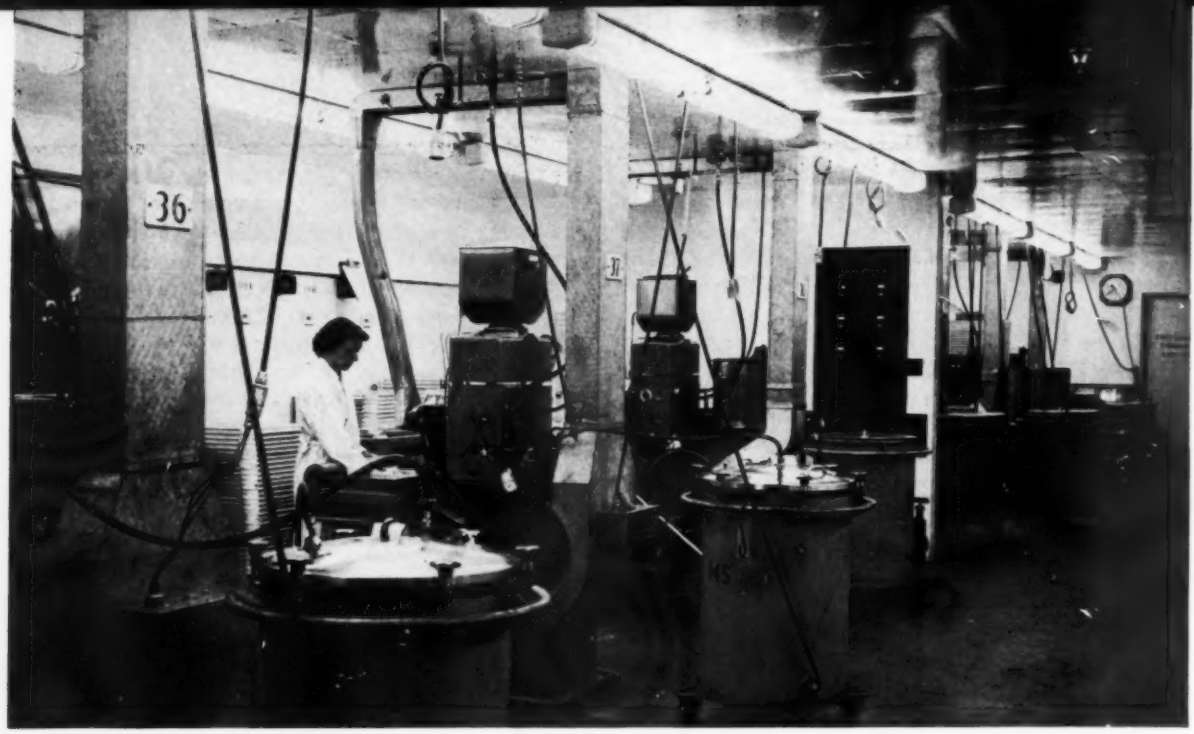
Those quaternary ammonium compounds possessed within the structure of an eighteen-carbon straight chain seem to be the most adaptable for this function, probably because of their greater insolubility in water and therefore their greater chance to remain on the hair after rinsing with fresh water. In actual use the preparation containing some 2.5 per cent of the active quaternary is diluted 8-10 times with water and then applied to the hair. After allowing it to remain in contact with the hair for about five minutes, the hair is rinsed with water, thus removing the residual portion which was not absorbed by the hair. Such a treatment detracts from the harsh "feel" and, because of the film, makes the hair more easily manageable and combed. It eases their operation since it enables tangled hair to be combed with much less effort.

The quaternary rinses have become increasingly popular for use after a shampoo since, in addition to the removal of the alkaline-earth soaps, they exert the same effect on the hair after shampooing as they do after the permanent wave. As far as I know there has been no attempt to market a hair rinse containing both a tinting agent and the quaternary ammonium compound. The obstacles are somewhat formidable, and offhand I cannot see how they can easily be overcome. However, theoretically at least, it should be possible to add the tinting solution after the treatment with the quaternary, since the quaternary should behave as a mordant and therefore fix the dye more effectively than the hair itself will. This type of operation should be worth investigating, though it would be somewhat cumbersome for home use because of the increase in the number of operations it would entail.

I have attempted to give only an outline of the theory and practice of quaternary hair rinses. This work is still being continued and studied since it is not completely understood. Certainly, the role of fatty additives to the quaternaries is coming in for greater attention since it has been found that these additives are fixed more firmly to the hair in the presence of the quaternary. Why this activity takes place under these conditions is still a subject of surmise. Advantage is taken of this however in the incorporation of these fatty additions in the quaternary preparation to enhance the effects on the hair.

The cream hair rinse is a relatively new addition to the cosmetic sales list and it is certain that new adaptations will continue to be made, as increasing work indicates the different effects other substances have when used in conjunction with them.

The choice of the quaternary is dictated by how well it serves its function and in addition how safely it may be used without irritational side effects. I have heard of no cases of injury because of the use of a cream hair rinse but the governmental agencies are watching this classification of materials because some of them—when used in too high a concentration—have been found to be irritating, especially if they should accidently get into the eye.



Numbered ducts leading from an overhead supply system provide conditioned air to machines making soft elastic gelatin capsules in the plant of Gelatin Products Div., R. P. Scherer Corp., Detroit. The atmosphere surrounding the machines is also closely controlled.

One Million Air-Conditioned Capsules Per Day

by Paul S. Hosman

PROFESSIONAL ENGINEER
MECHANICAL HEAT AND COLD, INC.
DETROIT, MICHIGAN

When Robert P. Scherer developed a machine for making soft elastic gelatin capsules back in 1933, the infant air-conditioning industry was just beginning its long struggle for recognition. At that time no one, except perhaps Mr. Scherer, envisioned that a machine capable of turning out up to 1,000,000 glistening capsules a day would revolutionize the packaging of many products. And certainly the air-conditioning industry was not yet aware of what its part would be in aiding Gelatin Products Division, R. P. Scherer Corporation, to reach its current production of billions of capsules a year.

The inter-dependency of two fast-growing industries —gelatin capsules and air conditioning—makes a dramatic story. With the aid of temperature and humidity control Gelatin Products is now making capsules for everything from vitamins to smoke puffs for toy trains and castor-oil golf-ball cores. Today, in addition to pharmaceuticals, the public is buying garlic oil, machine oil, cosmetics, margarine color, insect repellents and dog medicine—all carefully measured and packed in gleaming gelatin capsules.

Mr. Scherer's mechanical marvel forms, fills, and seals a capsule in any shape or dimension, to produce a neat container for almost any liquid, semi-liquid, or paste that won't dissolve gelatin. But because of the inherent characteristics of gelatin itself, the operation of this amazing machine is dependent upon man-made atmospheric conditions.

It is not our purpose here to explore the complicated air-conditioning-engineering worked out by Gelatin Products engineers in cooperation with engineers on the staff of Mechanical Heat & Cold, Inc., of Detroit. Rather, we are interested in outlining why air condi-

tioning and industrial refrigeration have become essential to the manufacture and storage of so many pharmaceutical products.

On their shipping carton labels, Gelatin Products refer to the old drug-trade adage—"Keep in a cool, dry place." Applied to gelatin capsules, this means—"*Manufacture and store* in a cool, dry place."

These technicians point out that gelatin capsule shells contain not only gelatin but also a plasticizer and water. The capsule must be kept in stable equilibrium with the surrounding air, to prevent changes in shape, hardness or tackiness. And because of the water content of the capsule, this bears a direct relationship to the relative humidity of the air. Gelatin Products men report that "although it is possible to adjust controls on the capsulation machine to meet varying conditions, it is difficult and requires a high degree of skill and experience to do so. We have found that the investment in air conditioning to produce constant atmospheric conditions around the machine is a more practical solution."

Temperatures required in the Gelatin Products plant vary from as low as 60 degrees F. to as high as 85 degrees F., as gelatin-glycerine-water mixtures will melt above this point. Relative humidities from as low as 20 per cent to as high as 55 per cent are used to keep the water content of the capsule shell in equilibrium with the atmosphere.

Originally the gelatin roll in the capsulating machine was cooled by chilled water, but today this has been replaced by conditioning the surrounding air to a temperature of 75 degrees F. at 35 per cent relative humidity. In addition, conditioned air supplied directly to the capsulating machine itself is maintained at the temperature and humidity needed to meet existing conditions. Characteristics of the air supplied may vary considerably from time to time with relation to the product handled and also the outside atmospheric conditions.

After being made, the capsules pass through a drying tunnel where a temperature of 75 degrees F. and 26 per cent relative humidity is maintained. They then move through a conditioned inspection department and a "wash room." Later they go to a bulk packaging department where normal "comfort" air-conditioning conditions are found to be highly satisfactory. The company laboratory and offices are also equipped with air conditioning, and these areas are held at 72 degrees F. and about 30 per cent relative humidity.

The problem of product storage is one of avoiding extremes, as capsules may be stored under a wide variety of atmospheric conditions. Yet they must be protected against high temperatures to avoid melting, high humidity to avoid softening, and low humidity to avoid brittleness.

Transportation and terminal-storage conditions are a consideration, but the product, as shipped in standard bulk containers, is well packaged to meet the hazards of transportation.

Because of the unusual temperature and humidity conditions encountered in the Gelatin Product plants, engineers make use of both mechanical refrigeration and Kathabar, or lithium chloride dehumidifiers. While "comfort" conditions may be maintained by passing air through coils or sprays of 42 degrees F. chilled water, lower humidities are obtained more economically by use of the Kathabar air drying units.

The original air-conditioning equipment, planned and installed in 1939, consisted of a 90-ton steam-jet refrigeration unit and a bank of Kathabar units. This was supplemented in 1942 by four 40-hp Westinghouse hermetic Freon units. Kathabar air-drying units and additional air-handling equipment have also been added from time to time. In the past year, the capacity has been increased by an additional 200 hp of Westinghouse machines, plus several additional Kathabar units.

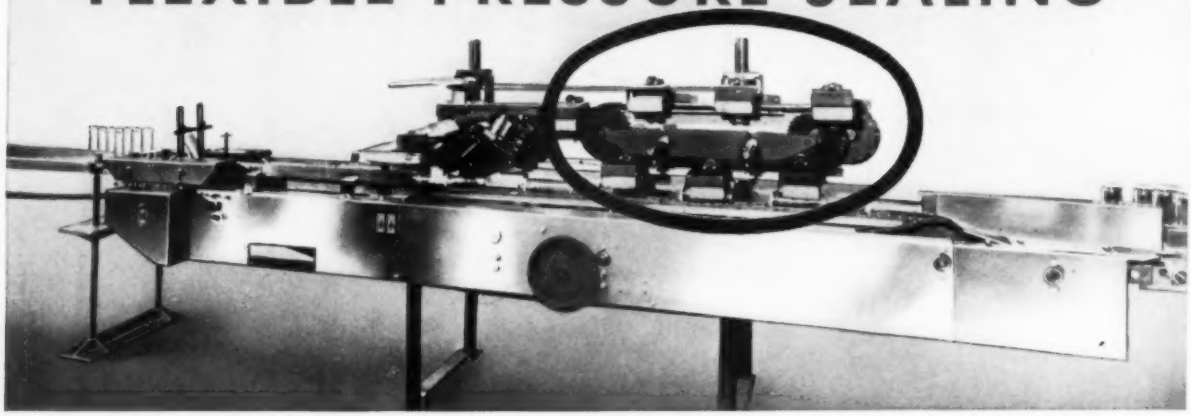
As the capsulating machines operate 24 hours a day, the entire controlled-climate system has been in continuous service for over 54,000 hours. Company engineers report that the Westinghouse condensing units have operated continuously for nine years without a single shutdown caused by mechanical failure. When it is considered that this service equals forty years of normal service on an equivalent comfort air-conditioning system, it is an unusual record.

Scherer engineers are constantly looking to the future. An air-conditioned pilot plant has been equipped to reduce the bacterial count from levels of 25 to 100 down to 0 to 10. This has been done by the use of special air filters, sterile lamps, washing the air with Phemerol, and spraying with DDT.

Still other engineering advancements in the plant include the use of 60 cycle ferromagnetic inductive heating for moving solidified fats from drums, welding of Saran tubing, high-speed counting machines, and ratio weigh counting. Drying by tumbling, air blast, vacuum, and desiccating (freezing) is being tried out. At the same time, they are developing many new types of processing equipment that will improve the company's overall operation on many fronts.

Operating 24 hours a day, seven days a week, these two Westinghouse sealed direct-connected refrigerating machines provide 42° F. water for air conditioning in the plant of Gelatin Products Div., R. P. Scherer Corp., Detroit. The machines have operated nine years without mechanical failure. This day-and-night service equals 40 years of normal service in an equivalent comfort air conditioning system.

C-O-N-T-I-N-U-O-U-S
FLEXIBLE PRESSURE SEALING



A big advance in LABELING!

You took great pains to obtain colorful, attractive labels, for you realize how much they mean to SALES. And now you can be sure that your labels will always look their best—be uniformly smooth, free from unsightly wrinkles, firmly sealed!

The new THRIFTY LABELER gives you this important sales advantage because it applies the label by a radically improved method. The label is not merely tapped on—its entire surface is subjected to continuous flexible pressure. Leaves the machine so tightly sealed that it will withstand the hardest handling. Glue failures are a thing of the past. The containers may be hot or cold, wet or dry. Labels may be rectangular, round or fancy cut; surfaces of containers odd shaped or recessed.

SPEED—40 to 120 a minute...SIZE RANGE—from a gallon jug to a 4-ounce bottle...QUICKLY ADJUSTABLE with few change parts.

Labels a wide variety of containers. Surfaces may be odd shaped or recessed.

LOW COST

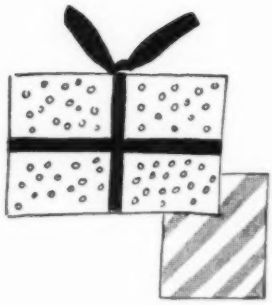
Low initial cost, low maintenance and high operating efficiency make the Thrifty Labeler a sure way to better profits—whether you are labeling by hand or machine.

THE NEW
Thrifty Labeler

Write for full particulars

NEW YORK PHILADELPHIA BOSTON CLEVELAND CHICAGO ATLANTA
DALLAS DENVER LOS ANGELES SAN FRANCISCO SEATTLE TORONTO MEXICO, D.F.

PACKAGE MACHINERY COMPANY



Packaging and Selling

CHANCES FOR A DIVIDED INDUSTRY

It would be a revealing and in many ways a disturbing experience for a manufacturer of toilet preparations or a health product suitable for the grocery super-market to take a little trip around the country and to casually look over a selected sample of super-markets and individual grocery stores in a few cities.

Here are some of the conclusions that would probably be arrived at in even a brief survey.

The health and toilet goods departments are undoubtedly expanding in an increasing number of grocery stores. These are on the increase among the independent grocers, in some cases with ratty and feeble departments in relatively small stores. The pressure for this expansion is obvious when anyone talks to the grocer or to someone in super-market management. There is a common agreement that the big and prolonged honeymoon in the grocery store business is approaching an end. The dynamic expansion of the last several years is slowing up; sales of processed foods are levelling off and the grocer is being caught in a very serious pinch of operating costs. His appeal to the big food processors for additional discounts or extra help is falling on deaf ears. Instead of that the grocer is faced every day with an increase in premium deals and other promotions by the food processors which are rapidly running him into a state of profitless prosperity on his packaged foods. At best he is operating on a 17 to 18 per cent profit margin with most packaged foods and in spite of the rapid turnover of these products, the grocer's margin is getting slimmer and slimmer. As compared to that, he has been getting from 20 to 25 per cent gross from the drug rack jobber. He knows that if he can solve store management problems he can get from the drug wholesaler or the drug or cosmetic manufacturer a discount running from 33-1/3 to 40 per cent.

The grocery jobber is in the same boat as the grocery store. Like the grocer he operates on a very narrow margin running from four to seven per cent as compared to an average 15 per cent for the wholesale druggist. This means there is an increasing awareness of the grocery wholesaler for the high profits in wholesaling non-food items and particularly for packaged merchandise such as toilet preparations and health products.

There are 20,000 super-market grocers and about 350,000 independent grocery stores. This means that there is a total of 370,000 retail units looking more and more toward products of this industry. Since not over 20,000 now carry these industry products, that means a total theoretical expansion of 350,000 stores, a somewhat frightening picture. It is a definitely open question now whether or not two of the leading mass production toilet preparation manufacturers have not been caught in the trap of over-distribution through the addition of only ten to fifteen thousand grocery super-markets.

Leading toilet goods manufacturers making pre-sold packaged products and owning leading nationally recognized brands are selling in 54,000 drugstores, about 15,000 variety stores and a little over 1,000 department stores. When to these 70,000 normal traditional outlets a further addition of even 15,000 to 20,000 grocery stores with exceptional display facilities and exceptionally large traffic is added, it becomes an open question whether the consumer purchasers for these brands can sustain this number of stores.

It is possible that this developing situation in the retail food market can be loaded with trouble and headaches for this industry. The least of these headaches will be

the problem of over-distribution because this is something that individual companies will discover and solve in their own particular way or, as has been the long history of this industry, will decline and go out of business as a penalty for selling more retailers than the willingness of the consumer to accept their products will support.

The grocery store invasion of certain cosmetic products such as tooth paste, shampoo and other staples has already progressed to a point where the grocery store is getting 30 per cent of the total retail business of certain brands. As the pressure on the average grocer continues to force him to build up profitable non-food departments, the competition among leading grocers in different communities for leadership of this particular department will grow in intensity. When it comes to downright throat cutting and vicious competition at a time of stress, probably nothing in the retail business can hold a candle to the kind of battle of the giants which will take place among the leading super-markets as they approach the break-even point. This trade could very likely be in for a series of headaches beyond anything ever experienced from powerful independent drug retailers or the drug chains.

Since fair trade is bound to put certain limitations on this coming retail battle, it seems very likely that certain powerful interests in the retail food industry will turn their energies and their merchandise abilities toward the development of private label lines in toiletries and similar products. Nobody in the retail business has been more successful in establishing a strong position and often local leadership with their private label products than the grocery super-market. It is reasonable to guess that as the super-market solves the management problems of running their own toilet goods department and as they seek desperately to develop more high-profit lines, and as they discover how relatively easy it is to develop a line of private label toiletries that this new factor in our industry might become something very realistic for the industry to face.

For quite a little while now there have been rumors, with a touch of authenticity, that one or two of the leading food combines are assidiously seeking a cosmetic company which they could purchase to bring a greater degree of diversity to their business. Since diversification as a safety factor or a stabilizing influence is everywhere in business receiving the nod of approval, it seems reasonable that these rumors mean that something in this direction is under way. One rumor, which named a very powerful food factor, a processor in one of our basic farm products and the owner of one of the best known brands in this country, stated that this food company, while negotiating for a cosmetic company, had a written agreement with several of the major super-market chains to give these cosmetics a preferred store position on a three-year contract if the food company completed the purchase of the cosmetic company.

The three major soap companies that is, Procter & Gamble, Colgate and Lever Bros., are now all major producers and distributors of cosmetics and toilet preparations. While these great mass producers are following the traditional line of cosmetic distribution, that is, the drugstore and the variety store, they are basically in a much better position to turn the weight of their organization and their promotions in the far vaster field for distribution, that is the grocery store. All of these things add up to a potent possibility of the cosmetic and toilet preparation industry largely splitting into two competing industries, that is, the traditional cosmetic industry committed primarily to the department store, the drugstore and the variety store. With only a few exceptions these cosmetic companies will be compelled to largely confine themselves to this traditional distribution field, partly because they could never develop sufficient consumer purchasing to support 70,000 cosmetic retailers plus 370,000 grocery stores and also partly because no cosmetic line alone, however big and diversified, could support the distributing organization to handle such a vast distribution. On the other hand, the people primarily based upon the grocery trade who may enter the cosmetic business, that is, leading grocery retailers, food manufacturers and soap manufacturers, may well find that the food retailer could pretty well take up all of their energy and resources and give them superior store cooperation, store traffic and store location.

The possibility of the manufacturers who distribute drug and cosmetic pre-sold packaged goods suitable for mass distribution splitting into antagonistic and highly competitive groups fighting for consumer favor is not pleasing to contemplate. And yet it is highly likely that the present group of manufacturers in this industry, who are basically committed to traditional distribution such as the drugstore, variety store and department store, will find it difficult or impossible for a variety of reasons to maneuver very far out of this distribution. If the trend continues for rapid expansion in grocery stores for these products it could very well bring into the manufacturing picture a number of new interests who are masters in the problems of mass production and mass distribution and who think first and primarily of the grocery store as a retail outlet, firstly, because they are thoroughly entrenched in this vast field and secondly, because these 350,000 stores offer infinitely more possibility for mass production and mass distribution.

Understanding Man

Marketing circles are beginning to more than suspect that the man is much more important as a retail buyer than the thinking of the last 25 years has indicated. Probably credit for this new idea should go to the super-market grocery stores. Last year the A & P came up with some very revealing facts on the high percentage of men shopping in their stores and the fact that men were more liberal spenders and more responsive to displays for impulse sales. Now the advertising agency, Erwin, Wasey & Co., in a recent study shows that seven out of every 10 men in the United States shop in food stores at least once a week. They found that the trend for more men shopping is on a sharp upgrade and that men prefer self-service.

It is probable that the leading grocery super-markets are in the number-one-preferred retail spot for the number of men shoppers. If this is so, it might lead to further and unexpected expansion in food stores and non-food products.

DRESSING UP makes the difference!

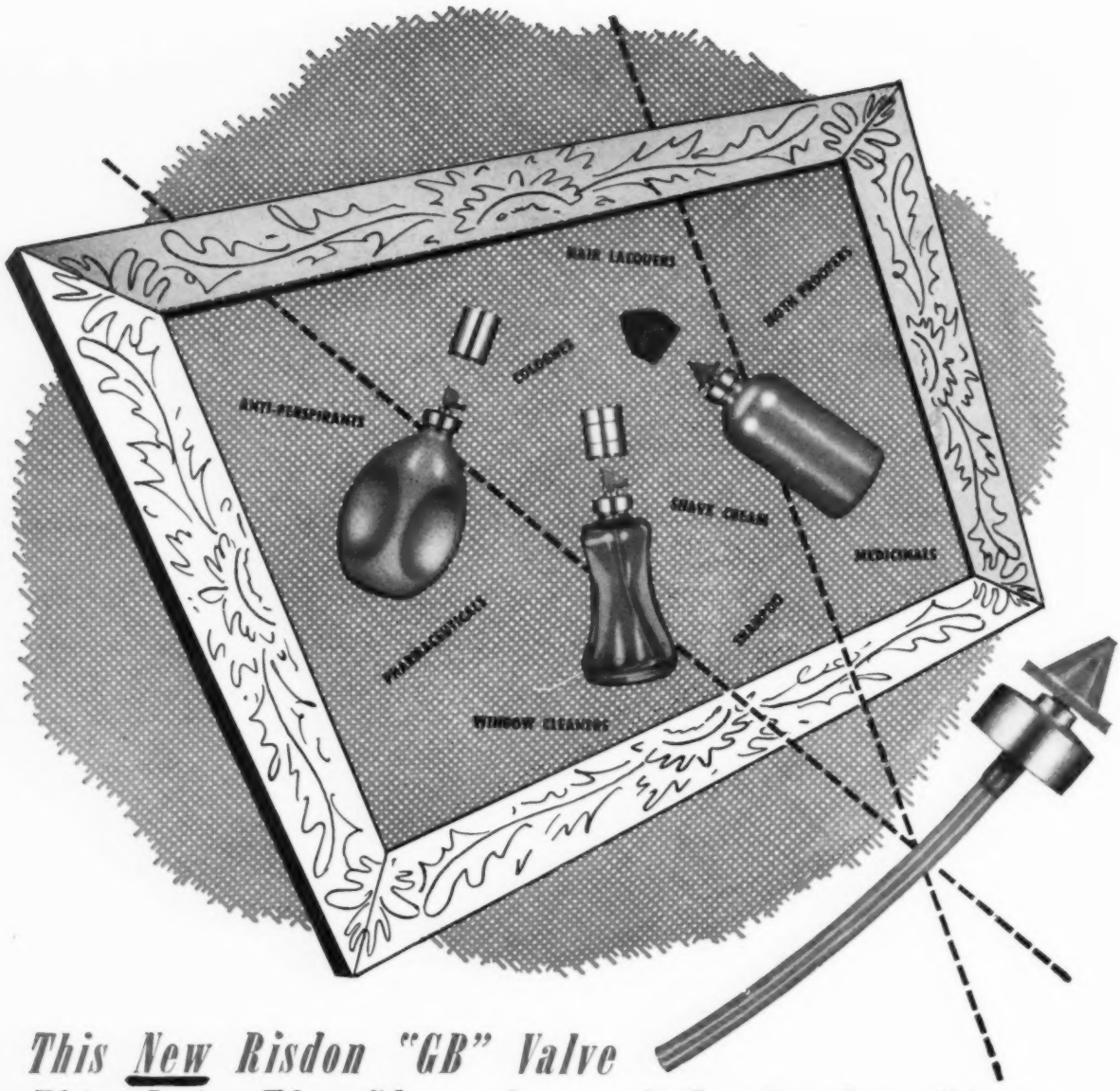
Here's elegance that isn't costly. This 4-ounce Duraglas stock-mold bottle, A-9454, and Empress closure combine quality and economy. Other sizes: ¾, 1½, 1¾, and 10 ounces.

Glistening Glass... chic closures... exclusive ACL label designs blended tastefully create a salespackage that's hard to resist.

May we submit our ideas for a Duraglas salespackage for your products?

Duraglas packages are protectors of quality

OWENS-ILLINOIS GLASS COMPANY • TOLEDO 1, OHIO • BRANCHES IN PRINCIPAL CITIES



This New Risdon "GB" Valve Fits Into The Glass-Aerosol Packaging Picture

No Metal In Contact With Contents....
No Danger of Corrosion Of Valve Components

- In Performance and Appearance The "GB" Valve Is Tailored To Complement Bottle-Packed Spray Products.
- Applicable To Both Coated and Uncoated Bottles.
- Vertical Spray or Horizontal Spray.
- Protective Caps in metal or plastic available in custom-made designs to complement the product package.

Contact Risdon for further details on either the Model "GB" or Model JBR Valve.

RISDON

THE RISDON MANUFACTURING COMPANY • Valve Division
200 Risdon Street, Naugatuck, Conn.

RISDON'S JBR VALVE—KEY TO NEW AEROSOL POSSIBILITIES—NEW QUALITY PERFORMANCE AND STYLING FOR BOTH METAL AND GLASS CONTAINERS.

Makes possible the use of wider range of propellents. Uses all standard types plus "Freon-21", "Freon-22" and methylene chloride.

Sleek all-metal surface and cap enhance packages with a "quality look."

Produces a soft spray cloud of uniformly minute particles. Modified models can be supplied to give larger particle size, when required. Positive cut off.

Write for free descriptive folder.

RI-34

Dropper Assembly Package

Plastic Assembled Products Company of Baltimore has come up with an improved for medicine-dropper assemblies, in which the dropper is wrapped in pliofilm. George W. Walker, president of the firm, states that, because of the addition of fully automatic, high-speed equipment, the company can furnish these pliofilm-wrapped droppers without any serious delay in delivery schedules. Printed messages, like instructions and firm names, can be placed on the wrapping if desired.

The advantages of this Plasti-Pak are that the dropper presents a much cleaner and more sanitary appearance. It is kept dust- and lint-free until it is used by the consumer.

Full information on the Plasti-Pak may be obtained from Plastic Assembled Products Company, 1149 Watson St., Baltimore, Md.

Subway Smells

Germs haven't much use for subways, according to the American Society of Civil Engineers. Bacteria prefer street air two to one over subway air. Also, according to the engineers, there is no truth in the slander that the smells in subways are caused by lubricating oil between the ties. Most offensive smells, according to the engineers, are caused by human occupation.

Leave It to Research

Just a little while ago, a section of this industry told the cigarette people it was high time that they got on the job with research to prove that cigarette smoking is not harmful. Of course, the cigarette people have been doing some research, as the introduction of the king-size cigarette and the filter cigarette shows.

The heavy barrage of advertising introducing the latest filter-tip cigarette shows how effective cigarette research has become. In this advertising is a letter from the Director of Research from this leading tobacco company. This letter states as a triumph that the new patented filter will remove over one-third of the smoke. This is certainly a victory which goes far toward nullifying the demands of the medical people. Certainly the vast competition faced by the cigarette industry will soon compel another cigarette manufacturer to triumphantly announce that he has a different filter which will remove 50 per cent of the smoke. It may even be that the final triumph of the cigarette industry will be a filtered cigarette which removes all of the smoke.

Correction. The information which this magazine received in regard to the Irwin D. Wolf Award (November, 1953, Page 631) was in error. The cans of the Mennen Company, which received this award, should have been credited to Crown Can Company.

American Perfumes Abroad

There never have been very many all-American perfume companies, at least not many that attained any prominence and any degree of permanence. Still fewer are there who have had the courage to believe that American perfumes could compete on the world market.

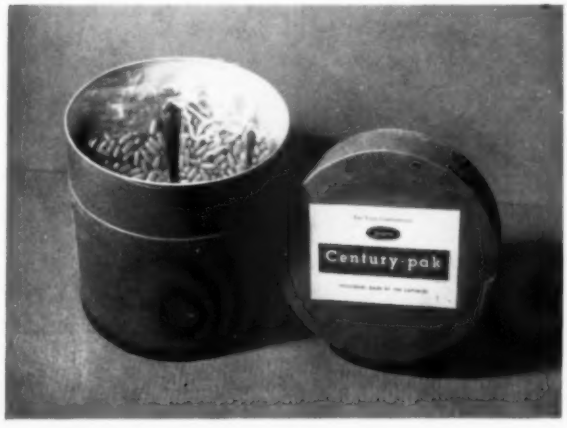
A little while ago, we reported how the electronic twins, Charlie Granville and Lee Swartout, the guiding geniuses of Angelique Perfumes, invaded Paris. Now, we received a collection of magazines and local newspaper advertisements which have been appearing in Thailand. I guess the American perfume business is beginning to feel its oats around the world which is a wonderful thing for a promise for the future for this industry.

Bulk Shipment by Century-Pak

Lederle Laboratories has instituted a new method of packaging capsules and tablets for bulk shipment. Called Century-Pak, the new package protects against moisture, reduces chipping and breaking, and will help prevent malformation and sticking of capsules at the bottom of the drum even after long periods of time, according to Henry Wendt, Jr., director of sales.

In the Century-Pak, 100 capsules or tablets are placed in a strong, moisture-proof plastic bag, the opening of which is heat sealed. Several of these bags are placed in drums for bulk shipment.

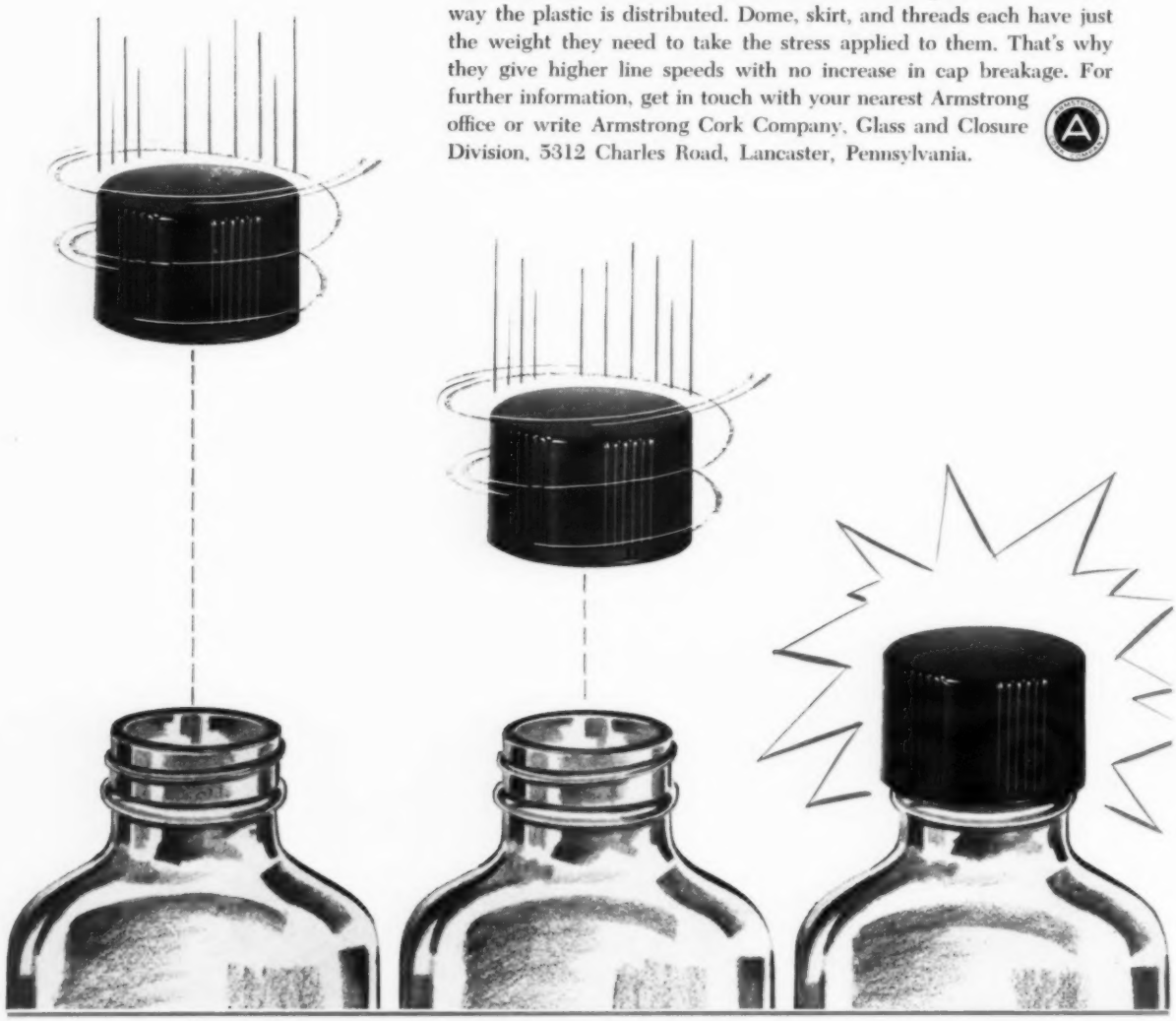
At the present time, nine Lederle products are being packed in this manner.



Faster Capping!

Your high-speed capping machines are only as good as the caps you use. That's why it's so important to use a cap that's built to take the punishment of modern high-speed equipment.

Armstrong's Hi-Tork® Caps are designed for that very job. They're heavier (weigh them and see), but their real strength comes from the way the plastic is distributed. Dome, skirt, and threads each have just the weight they need to take the stress applied to them. That's why they give higher line speeds with no increase in cap breakage. For further information, get in touch with your nearest Armstrong office or write Armstrong Cork Company, Glass and Closure Division, 5312 Charles Road, Lancaster, Pennsylvania.



ARMSTRONG'S *"HI-TORK"* MOLDED CAPS

Dog's Life

The Society for the Prevention of Cruelty to Animals has never found an occasion to be critical of the cosmetic industry. This has been true even though many thousands of pet owners, in their pride of display, have harassed their poor animals with shampoos, talcum powder treatments, hairdos of all sorts, nail polish on the toe nails and other cosmetic treatments. There are, in fact, several small cosmetic companies thriving on a pet cosmetic line.

One reason for this lack of criticism may rest in a degree of uncertainty as to just how seriously pets react to this cosmetic treatment. Undoubtedly, there are some dogs who glory in this glamour and get a great deal of canine satisfaction in looking down their scented and powdered noses at the ordinary, poor mut.

It looks as if the time has come, however, when some action will have to be taken on a chemical product closely allied to the cosmetic business. The Quaker Oats Company, which makes a dog food containing chlorophyll, has just discovered that the deodorizing qualities of chlorophyll, when taken unwittingly by the dog in his daily rations, not only kills the dog's odor but is a complete stab in the back to all romantic impulses. In other words, a dog who is put upon a daily diet of food containing chlorophyll may stalk through life in lonely solitude with no friend to tell him or her what is wrong.

Chlorophyll is getting far more than its share of adverse criticism at this present time. This discovery of its invidious and baneful effect upon dog sociology is another painful revelation.

Blind Faith in Data

"Blind faith" in the value of data concerning the "average man" should be abandoned in national marketing, according to Graham Erdwurm, president of George A. Breon & Co., in a seminar sponsored by the Sterling Winthrop Research Institute.

"The result has been to create the myth of the average man, in which businessmen have been abetted by a wealth of non-processed information collected not only by them but by nearly every Government agency engaged in a review of U. S. business affairs.

"Do any of us fit the description of the average American family head? Do we father 2-1/3 children each, are we living in a 3-5/8 room house? Too many of us deviate from these national norms."

It doesn't seem to us that there is anything average in marketing ethical pharmaceuticals. Most of these products are as highly specialized in the ailment groups that they seek as a market as they are in the research which develop the products.

In the perfume business, for instance, it is a very common experience to have a group of consumers estatically in love with the perfume and to have another group very emphatic in stating their dislikes. It is probably true that no perfume has become famous unless there has been something of this decided difference of opinion. All that this means is that perfume is an excellent example of a product that appeals to certain individuals, certain emotions, certain tastes and certain social statuses. Anything like an appeal to the average individual would probably be destructive in the business life of a perfume.

Marketing in this country has achieved such a triumph in marketing low-priced utility products on a mass basis that there is a tendency to forget the wide variations in such things as individual taste. Sometimes this effort to establish a mass appeal leads to a high degree of mediocrity which must be sustained by heavy advertising and ruthless maneuvers at the point of sale. Actually in a country of 160,000,000 people, there is ample room and opportunity to select a class or sectionalized market and to develop from this market a very secure position and sufficient volume to reach the highest point of economy in manufacturing and distribution.

Increasing Gifts

The traditional Christmas gift products appear to be in for an increasing number of competitors. Since the War, when a very limited number of goods were available for Christmas buying there has been a steady expansion of Christmas gift packaging in industries that were not before this period serious contenders for the Christmas gift buying.

An example of an industry which always did receive quite a bit of Christmas gift business, mostly on a package assembly of standard products is the liquor industry. These people are now engaged in a big buildup offering a highly decorated decanter.

The food industry also receives some Christmas business in highly specialized fields. Now there seems to be a drive to bring staples into the Christmas package. Life Magazine will publish an 8-page full color ad this year for Christmas food sales from such people as General Mills, Minnesota Mining & Manufacturing, Wesson Oil and California Walnut Growers Association. Everywhere you look are gift ensembles of staple goods used throughout the year, for Christmas giving. It looks as if some of the industries such as perfume which leans on Christmas for up to 70 per cent of its sales is very much in need of a marketing plan to build up all-year-round sales. ■

Continental's plate inspectors are old-school perfectionists

OUR "CLEAN PLATE CLUB" HELPS YOU SELL

Clean, crisp printing plates—and only that kind—will make the handsome lithographed containers that sell proprietary products. So, though Continental has presses that roll at dizzying speed, one place we never try to save time is in the preparation of plates.

Continental's photo-compositors are perfectionists. They aren't happy until every last detail of your package design is faithfully caught on metal.

When they turn their plates over to the pressmen, there can be no doubt about the appearance of the finished container.

Fine lithography is only one of the services Continental offers its customers in the toiletries-drugs field. They range from package design to packaging machine maintenance. We'd like to show you how we tailor these services to your individual needs. Just give us a call.

CONTINENTAL CAN COMPANY

Continental Can Building,
100 E. 42nd Street, New York 17, N. Y.

EASTERN DIVISION
100 E. 42nd St., New York 17

CENTRAL DIVISION
135 So. La Salle St., Chicago 3

PACIFIC DIVISION
Russ Building, San Francisco 4

Lentheric has provided newly-designed "omnibus" cartons for its line of men's toiletries. They can hold any of the several different products in the line, because of a window in the face of each carton through which the label of the bottle appears. No product name is necessary or is shown on the cartons themselves, only the Lentheric name in maroon letters.

The cartons are produced by the Lord Baltimore Press.

Richard Hudnut has added "Spray and Stay" to its line of hair preparations. This product is a finely-atomized, delicately-fragrant liquid that gives the hair needed body to hold it in place.

J. R. Watkins Co. has added Mary King Pink Silk Lotion to its line of products. Recommended for both men and women, the pink, silky lotion is packaged in four- and eight-ounce streamlined glass bottles with wide, sturdy bases to prevent tipping. Owens-Illinois Glass Co. is manufacturing the Duraglas containers and white plastic closures which carry the brand-identification initials, "MK."

Givaudan-Delawanna, Inc. has developed a new series of perfumes prepared specifically for use in dry-powdered detergents for household use. They will be sold under the trade name of Tergescents.

The company has also announced that it is marketing a new Rose specialty, Rosynthia, which has the qualities of floweriness, strength, uniformity and lastingness. It can be used as an extender or as a substitute for natural Otto of Rose and Rose de Mai Absolute, since it has their complementary qualities.

Abbott Laboratories is distributing Covicone protective skin cream, a greaseless easily applied formula which provides dependable skin protection against contact dermatoses and allied conditions. The skin protection is provided by a special plasticized combination of silicone, nitrocellulose and castor oil suspended in a greaseless, vanishing cream base. When massaged into the skin, this plasticized material forms an inert, invisible protective coating which resists removal by normal washing of the hands.

The S. E. Massengill Company recently released four new products: Tablets and Elixir Broniacin, which offers bromide therapy without side effects; Semets antibiotic throat troches, for relieving minor throat irritations associated with coughs, colds, tonsilitis and pharyngitis; Semoid Rectal Suppositories, which have a soothing, astringent and healing effect on hemorrhoids; and Terpin Hydrate and Codeine Lozenges, a convenient tablet form of the expectorant and cough syrup. Since they are dissolved slowly in the mouth, the effects of the lozenges are exerted over a longer period of time.

The Upjohn Co. has announced a new dosage form of penicillin for oral administration which makes it possible to maintain prolonged effective blood levels of the antibiotic in patients. The new form, Pen-G-Cap offers 200,000 units of penicillin G suspended in oil and enclosed in a soft gelatin capsule. It is packed in bottles of 12, 100 and 500 capsules each.

Armour Laboratories has added penicillin to its Quadri-Sulfa formula in its new product, Deltamide with Penicillin. The tablets are buffered with calcium carbonate and the chocolate-flavored suspension is buffered with sodium citrate.

E. R. Squibb & Sons is distributing Tarquinor, a cosmetically elegant crude-coal-tar cream which does not discolor the skin or stain clothing. It is indicated in the treatment of a wide range of skin disorders. When it is massaged into the skin, the cream's base disappears without leaving a film of excess medicament. The finely-reduced, dispersed particles of crude coal tar and the Quinolor are brought into intimate contact with the skin for deeper penetration and greater therapeutic activity.

Wyeth has prepared Bicillin-SM, a compound being made available to poultry growers for the treatment of air-sac infection. It contains both

PLASTI-PAK
MODERN PACKAGING
FOR
DROPPER ASSEMBLIES
The Plastic Assembled Products Company has made another significant advance in dropper assemblies with its PLASTI-PAK. Fully automatic, high speed equipment enables us to wrap dropper assemblies in cellophane or pliofilm to your exact specifications at moderate cost. If desired, a printed message may be placed on the wrapping. For full information about PLASTI-PAK or the solution to any of your closure problems, write or wire today.
World's Largest Manufacturer of Dropper Fitments.
PAPCO
PLASTIC ASSEMBLED PRODUCTS CO.
1149 Watson St. Baltimore, Md.

Doin's ... (CONTINUED)

Bicillin, Wyeth's long-acting penicillin, and dihydrostreptomycin sulfate. It is administered by intramuscular injection into the thigh, the dose being determined by the weight of the bird.

Desitin Chemical Company announces that Desitin Lotion has been greatly improved in both physical and therapeutic properties. It is now a more concentrated preparation which affords maximum skin coverage. A special process makes the suspension remain free-flowing and homogenous.

Union Pharmaceutical Co. is distributing a new, small-size package of Inhiston-APC Cold Tablets. A slide box, wrapped in cellophane, the new package contains 12 tablets. There is no change in quantity or price.

Pfizer Laboratories is marketing Bonamine, a new drug which in large-scale tests has proved to give 24-hour protection against motion sickness with a single dose. The drug was discovered by the European chemical firm, Union Chimique Belgec.

George A. Breon & Co. has added a 100-tablet package of Anodynos-DHC to the previously introduced 500-tablet size. The product is indicated for the relief of pain, febrile conditions and in treating all types of coughs, including that of tuberculosis.

Smith, Kline & French Laboratories has withdrawn its product, Drilozets Lozenges, because of difficulty in maintaining the potency of one of its ingredients. The company states that while this instability is harmless, the product does not meet the firm's requirements.

Parke, Davis & Co. has prepared Amphedase Kapseals for wide clinical applications ranging from asthenia to geriatrics. They also offer a unique approach, according to the company, for managing patients with depression, obesity, or chronic alcoholism. The product is a combination of vitamin components — nicotinamide, thiamine hydrochloride and ascorbic acid—and dextro-amphetamine sulfate and Taka-Diastase.

Cigogne Corp. has packed Sortilege bath lotion and cologne in new boxes with a glossy black background and graded gold bronze stripes on the top portion.

Imco Container Corp., 75th & Cleveland Sts., Kansas City, Mo., has developed non-shattering cosmetic jars made of Bakelite polyethylene which are one-fifth the weight of conventional cosmetic jars and have new double-wall insulation. Pliable and shock-resistant, Bakelite polyethylene resists oils, moisture and most chemicals present in cosmetics.

Mann Fine Chemicals, Inc. is offering a base containing sufficient natural estrogenic hormones to produce a cosmetic cream containing 10,000 I.U. per ounce.

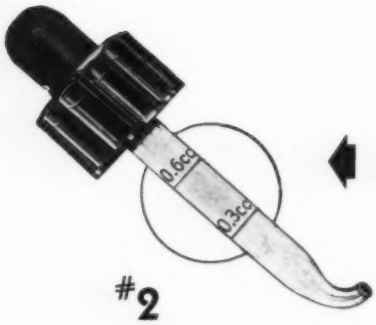
Jackson-Mitchell Pharmaceuticals has announced the preparation of Solsed, a new liquid sedative designed specifically for pediatric use. It contains pentobarbital, phenobarbital and homatropine methylbromide and is packed in 15-cc. bottles, each with a calibrated dropper.

Kremers-Urban Co. has prepared Salimeph-C, a new anti-arthritic designed for a dual attack on the paine spasm cycle of arthritis and other musculo-skeletal disorders. The preparation relieves the pain that causes the spasm and also relaxes the spasm that causes the pain.

Lederle Laboratories is marketing Diamox, a non-mercurial diuretic for patients suffering from edema resulting from congestive heart failure. It is administered orally, instead of by injection, as are other widely-used diuretics.

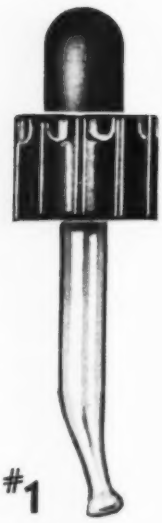
Shulton's Desert Flower Toilet Water has been redesigned with gold decor. Gold fronds sweep around the bottle which is topped by a carved polyethylene cap. The Desert Flower Body Sachet has the same design.

New Perfection DROPPING PARTS



#2

ACCURATELY CALIBRATED In Any Color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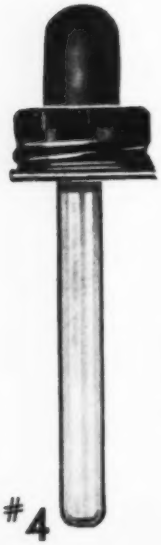

#4

This Inexpensive EXTRA FEATURE Adds A Welcome Convenience To The Use of Your Product

Accurate calibration of New Perfection dropper glasses adds immeasurably to the user's satisfaction with your product. Not only is the specified dose measured with more precision, but the tedious and time-wasting practice of counting drops is made unnecessary.

Trade-marks or firm names may also be imprinted on the glass, assuring that the name will be identified with the product each time it is used.

We can supply various colors of bulbs in natural rubber or in our special oil-resisting Amekine compound, caps of plastic or metal in many sizes and colors, and various types of dropper glasses in any length. New Perfection dropping parts will fit your own bottles, or can be supplied in combination with our Modernistic bottles in Amber, Blue, Green or Clear glass. Sizes: 2cc, ⅛, ¼, ½, 1 and 2 oz.

Write for Samples and Quotations

PENNSYLVANIA GLASS PRODUCTS CO. INC.

"Glass Goods of the Better Kind"

430 N. CRAIG ST. • PITTSBURGH 13, PA., U. S. A.

You can always be sure of deliveries when you use Sun Tubes. For we make it our business to meet delivery dates. Ask anyone.

Sun Tube Corporation
Hillside, New Jersey... Waverly 3-0400
Collapsible Metal Tubes · Aluminum and Zinc Cans

St. Louis 1, Missouri: Marvin Yates Co., Arcade Building
Cincinnati 8, Ohio: Ralph H. Auch, 3449 Custer Road
New Orleans 19, Louisiana: R.P. Anderson Co., 525 N. Solomon Pl.
Houston 19, Texas: R. P. Anderson Co., 5643 Overbrook Lane
Dallas 2, Texas: R. P. Anderson Co., 1122 Texas Bank Building
St. Paul 1, Minnesota: Alexander Seymour, 712 Pioneer Building
West Coast: Wm. J. Stoepker, 301 E. Colorado, Arcadia, California
Canada: Sun Tube Corp., 145 Spruce Street, Ottawa, Ontario
Mexico: Tubos de Estano, S. A. de C. V., 174 Oriente No. 267, Colonia Moctezuma, Mexico, D. F.

now ready... 1953 *nation-wide* Du Pont

Proves Fast-Growing Use

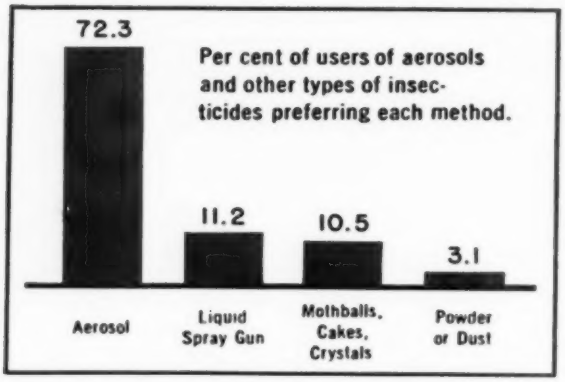
REPORTS OPINIONS OF MORE THAN 2500 FAMILIES

Year after year, the Du Pont Company's nation-wide survey of the market for aerosol products has shown that consumer and dealer acceptance of this modern method of packaging is steadily expanding. Today, according to the most recent consumer study, just completed, almost nine out of every ten families (86.9 per cent) have used one or more aerosols. In 1951 only 57.1 per cent of families interviewed had used aerosols.

The increase in number of users is reflected in all segments of the study; the various product types, geographical location of respondents, family income brackets and age groups. It conclusively indicates nation-wide endorsement of the aerosol method of dispensing a variety of familiar products.

BETTER THAN 6 TO 1 PREFER AEROSOL INSECTICIDES

An example of consumer preference for aerosols is graphically illustrated in the case of insecticides. Among users of aerosol insecticides and other types, 72 per cent preferred the aerosol method; whereas the next highest preference was for liquid sprays, preferred by only 11 per cent. This is almost a 7 to 1 preference for aerosols over any other method of dispensing insecticides. A strong preference for the aerosol method is also indicated in the other product types studied.



HOW THE SURVEY WAS CONDUCTED

A panel of 2500 families of various age groups and incomes, situated in towns and cities throughout all 48

KINETIC

"FREON" SAFE

"FREON" is Du Pont's registered trade-mark for its fluorinated hydrocarbon propellents.

Aerosol Market Survey

of Aerosol-Packed Products

states, was asked by means of a 6-page questionnaire what they think of aerosols in general. In addition, many other important questions were asked: What types of aerosols had consumers used? What types did they prefer? Where had they purchased the product? What did they think of it? Were they satisfied or dissatisfied with it? These and many more timely questions are answered in this new, up-to-the-minute analysis of the market for aerosols.

The answers provide a reliable, comprehensive picture of today's buyers . . . the aerosol manufacturers' customers. The entire study and tabulation of results were conducted for Du Pont by specialists in the field of research.

DIGEST OF SURVEY FINDINGS . . . A HANDBOOK OF MARKET DATA

These high lights of the aerosol market have been assembled by the Du Pont Company as a continuing service to the aerosol industry . . . an aid in forming manufacturing, distributing and marketing plans. The results of this most recent study will be made available in a compact, 20-page Digest . . . a veritable handbook of market data. First copies of the Digest will be distributed at the C. S. M. A. (Chemical Specialty Manufacturers' Association) Convention, December 6, 7 and 8, 1953, in the Mayflower Hotel, Washington, D. C. A talk, outlining the aerosol market survey and interpreting many of the facts contained in it, will be presented during the Convention. Time and date of the talk will be announced at the Convention, or you may obtain this information by visiting the Du Pont headquarters suite at the Mayflower Hotel.

If you miss the Convention, or prefer to have your copy of the 1953 Aerosol Market Survey Digest sent by mail . . . a request on your company letterhead will promptly bring a copy postpaid and without obligation.

"FREON" PROPELLENTS USED IN MAJORITY OF AEROSOL PRODUCTS

There are many reasons why the majority of pressure-packed aerosol products now on the market are packed with one or more "Freon"* fluorinated hydrocarbon propellents. "Freon" propellents are prepared to meet exacting requirements of pressures, solubility, physical make-up and other product characteristics. In addition, "Freon" propellents are safe . . . nonflammable, nonexplosive, noncorrosive, virtually nontoxic, and are manufactured under laboratory-controlled standards that insure purity and uniformity of the product.

TECHNICAL SERVICE AVAILABLE

If you are considering the possibility of entering the aerosol market by manufacturing one or more pressure-packed products under your own label, you are cordially invited to consult Du Pont for technical assistance in formulating a product using a "Freon" propellent. A booklet, "Package for Profit," containing information of interest to anyone thinking of entering the aerosol business, is available upon request. Write for a copy. E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division, Wilmington 98, Del.

PROPELLENTS

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

These two attractive bottles are available in either clear or frosted glass. They can be supplied plain or with fired-on ceramic labels.

Style 682

Made in 5 sizes—from ⅛ oz. to 4 oz.

Style D62

Made in 9 sizes—from ½ dram to 8 oz.

CARR-LOWREY GLASS CO.

Designers and manufacturers of fine glass containers

Factory and Main Office: BALTIMORE 3, MD. • *New York Office:* 40 W. FORTIETH ST. • *Chicago Office:* 1572 MERCHANDISE MART

Merchandising Magic....

...the revolutionary

glass aerosol

Application of the low pressure aerosol principle to glass containers opens an untapped field in modern packaging. Personal products, especially, gain sales appeal and value when offered in spray dispensers. Suntan oil, body deodorants, hair dressings, perfumes, colognes, and many other drug, cosmetic, and chemical items lend themselves to the convenience, cleanliness, economy, and protection push-button containers offer. And now, in glass, aerosol-dispensed products enjoy the added advantages of content visibility plus unlimited range of bottle sizes and shapes... permitting flexible pricing and distinctive packaging in highly competitive trades. Be sure to investigate this new trend. Have your product evaluated for aerosol dispensing possibilities. Contact Continental today.

get the *Extra* advantages of CONTINENTAL SERVICE

✱ **Complete Filling Service.** *We do not merchandise any products of our own. Our sole operation is contract and custom filling of containers with your products... liquid, pressurized or aerosol... in glass or cans.*

✱ **Extensive Laboratory and Production Facilities.** *Continental conducts chemical analysis and continuing research on dispensing methods and containers. Filling equipment is the finest in the industry, geared to handle orders of any size. Quality control and inspection safeguard your shipments.*

✱ **Warehousing and Drop Shipping in Bulk Lots.** *Extensive storage space permits you to use our two centrally-located plants as national distribution points, with consequent large savings on freight costs. We handle shipping and paper work. Your orders are ready when you want them.*

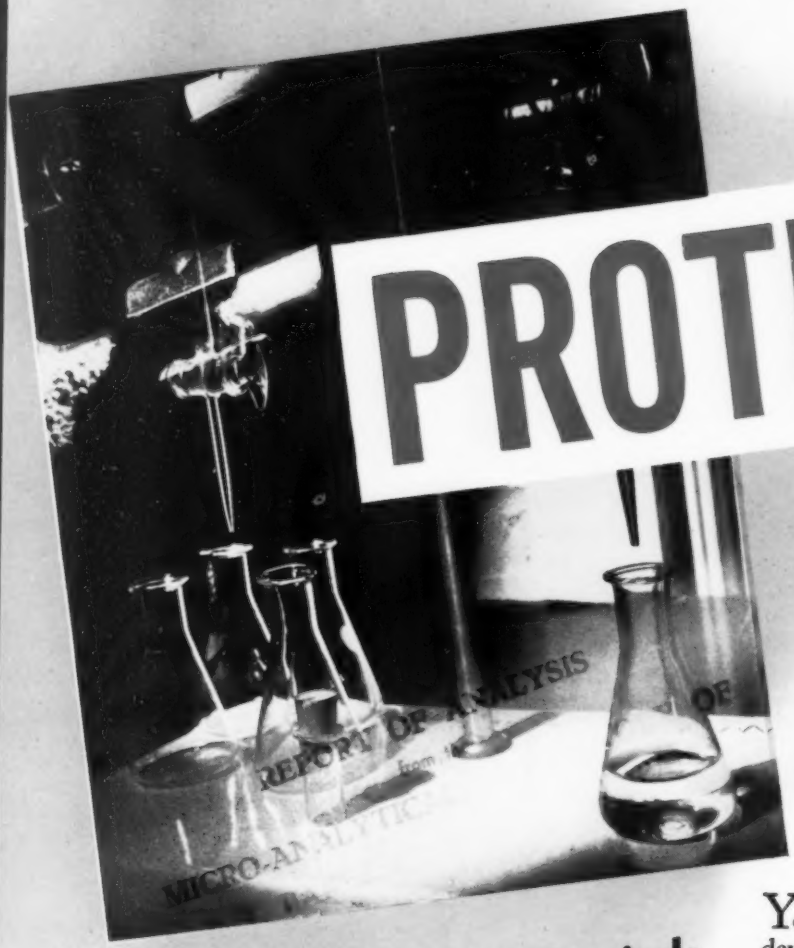
MAIN OFFICE • 123 NORTH HAZEL STREET, DANVILLE, ILLINOIS

CONTINENTAL FILLING CORPORATION

PLANTS • DANVILLE, ILLINOIS — HOBART, INDIANA

CONTRACT AND CUSTOM FILLING

LIQUID SPRAY FOAM



PROTECTION

for your ANTACID PREPARATIONS

Which of these Baker Fine Chemicals best suits your formula?

ALUMINUM HYDROXIDE
Available in several densities

BISMUTH SUBGALLATE
A clean yellow powder

BISMUTH SUBCARBONATE
Four densities and a suspension type

MAGNESIUM CARBONATE
Two uniform densities

MAGNESIUM TRISILICATE
Four densities

MAGNESIUM OXIDE
Several different types and densities

BISMUTH SUBSALICYLATE
High chemical purity

BISMUTH SUBNITRATE
High purity for ingredient use or synthesis

MAGNESIUM HYDROXIDE
For making tablets

MAGNESIUM PHOSPHATE,
Dibasic

Your company is proud of the formula it has developed for an antacid preparation.

Through rigid manufacturing and continued laboratory control you intend to maintain the reputation of that product and your good name.

Nothing is more essential to the fulfillment of such an intention than insistence *at all times* on quality fine chemicals—the vital ingredients of any antacid formula.

It is important that each fine chemical be the *right* one for your formula—that each be extremely pure—that each be regularly available to uniform physical standards. These things are your protection.

On this page are listed several Baker Fine Chemicals for antacid preparations. In this list, or in the Baker line, there is the *right* one for you. Whichever it is, that fine chemical brings you purity *to the decimal,* and is available on a tonnage basis.

No matter what product you manufacture—if it requires one or more fine chemicals of *measured purity*—specify Baker!

Address: *Fine Chemical Division,* J. T. Baker Chemical Company, Phillipsburg, New Jersey.

Baker CHEMICAL

Baker Chemicals

REAGENT • FINE • INDUSTRIAL

News . . .

McKee, Pres., Allied Labs.

J. L. McKee, executive vice-president and treasurer, has been elected president of Allied Laboratories, and Kenneth F. Valentine, president of Pitman-Moore Co., has become executive vice-president of Allied. Mr. Valentine will continue as head of Pitman-Moore, which is a division of Allies Laboratories.

J. L. McKEE

New Mfg. Lab. for Armour

Armour Laboratories last month formally opened a new manufacturing laboratory for producing ACTH, trypsin, insulin and other pharmaceuticals. Known as the Armour Pharmaceutical Center, the plant is designed so that all departments, from receiving through processing, packaging and shipping, are attached to a "spinal Cord" corridor one fourth of a mile long.

Some of the laboratory facilities are now also devoted to the production of blood fractions, gamma globulin for immunity against poliomyelitis and other infections, and human serum albumin.

The plant was open for inspection on November 19 by the press. Physicians and pharmacists of Kankakee, Ill., and the surrounding area, were guests of Edgar L. Patch, general manager, and the Armour Laboratories staff at a buffet luncheon and tour of the plant on the same day.

On Schering Research Staff

Dr. Samuel Irwin and Dr. Franklin E. Roth have been appointed as pharmacologists in the scientific research division of Schering Corp., according to Robert E. Waterman, vice-president.

Lyons Named to P.O. Dept.

Eugene J. Lyons, vice-president for personnel of Merck & Co., has been appointed assistant postmaster general in charge of personnel by President Eisenhower.

Opens Consulting Office

Franz Euler, former vice-president and director of sales of Merck (North America) Inc., has established offices as a Foreign Trade Consultant, with headquarters at 132 Nassau St., New York.

KENNETH F. VALENTINE

Begins Move to Pearl River

Lederle Laboratories division, American Cyanamid Co., began to transfer several departments on October 30 from the New York office at 30 Rockefeller Plaza to Pearl River, N. Y. The sales management, professional services, and budget and statistical departments were in the first phase of the transfer. About 125 people were affected in the move.

Eventually all of Lederle's offices and departments, except the New York regional sales office and part of the export department, will be located in Pearl River.

New Givaudan Plant, Brazil

Companhia Brasileira Givaudan, an associate company of L. Givaudan & Cie., S. A., Geneva, and Givaudan-Delawanna, Inc., has built a new factory in Sao Paulo, Brazil, for the manufacture of perfume raw materials. It is said to be the first plant to bring industrial production of synthetic aromatic materials to Brazil in order to supply the needs of the soap, perfumery and foodstuffs market in South America.

Givaudan's Atlanta, Ga., office and associate companies, have also moved to larger quarters, and are at 1156 Dalon Drive, N. E. The telephone number is ATwood 0122.

Centaur-Caldwell Changes

Henry H. Tuckley has been named assistant plant manager in charge of product control and development at the Centaur-Caldwell division, Sterling Drug Inc., and Eino J. Maki has become assistant plant manager in charge of personnel and production, according to Stanley I. Clark, vice-president.

Appointed by Colgate

R. E. Hilbrant has been appointed manager of the toilet article department of the Colgate-Palmolive Co., replacing J. A. Straka who recently resigned.

R. E. HILBRANT

Schenley Licensing Agreement

Schenley Laboratories recently concluded a long-term licensing agreement with Laboratorios Moura Brasil-Orlando Rangel, S.A., Rio de Janeiro, according to George R. Gilbert, vice-president in charge of international operations. Under the contract, the complete line of Schenley non-antibiotic specialty products will be manufactured and distributed by the Brazilian firm.

Dr. Nestor Maura-Brasil, president of the company, visited Schenley's New York offices for final negotiations and conferences on speeding the start of operations in his country.

All of Schenley's antibiotics have been packaged and distributed in Brazil for several years by another concern.

Hockley, V.P., Mathieson

R. L. Hockley, formerly president of Davison Chemical Corp., has been appointed vice-president of Mathieson Chemical Corp., according to Thomas S. Nichols, president. He will assume executive responsibilities of major importance in the Mathieson organization, states Mr. Nichols, and will be located at the executive offices in Baltimore on January 1, when the appointment becomes effective.

JOHN K. LINDSAY

KENYON D. BOWES

DANIEL C. SEARLE

Lindsay Named by Merrell

John K. Lindsay has been appointed export manager, international division, the Wm. S. Merrell Co., according to R. M. Dunning, director of the Merrell International division. For the last two years he has been responsible for the planning and preparation of the sales promotional and advertising material used in the international division, as well as for new-market planning.

Aude Joins Heyden

Robert M. Aude has been appointed manager of Heyden Chemical Corporation's Fords, N. J., plant, according to Simon Askin, president. For the past two years he was general superintendent of Monsanto Chemical Company's Port Plastics plant at Cincinnati.

Receive Kimble Glass Award

Dr. Robert A. Nelson, Jr., of the department of Microbiology of the Johns Hopkins University School of Hygiene and Public Health, and Manfred M. Mayer, associate Professor of Microbiology, last month received the Kimble Glass Methodology Research Award "for an outstanding contribution to the field of public health."

They received this award for developing a more accurate method of diagnosing syphilis and providing a new weapon in controlling spread of the disease. The award includes $500 in cash and an engraved silver plaque.

The presentation was made by Dr. I. H. Borts, director of the Iowa State Hygienic Laboratory, at the annual banquet of the Conference of State and Provincial Public Health Laboratory Directors on November 9 at the Statler Hotel, New York. The banquet was held in connection with the 81st annual meeting of the American Public Health Association.

Searle Exec. Appointments

Kenyon D. Bowes has been elected treasurer and Daniel C. Searle, assistant secretary, of G. D. Searle & Co., according to John G. Searle, president. Mr. Bowes will also continue as secretary and replaces Paul E. Tillman, formerly treasurer, who remains vice-president, director and chief financial officer of the company.

Daniel Searle is the son of the president and represents the fourth generation of the family in the active management of the business.

Robins Appointments

John E. Norton has been appointed manager of trade relations of the A. H. Robins Co. He had formerly been manager of the Virginia division of the company.

L. M. Wright, with Robins since 1942, has been appointed assistant sales manager, according to E. W. Zeller, general sales manager.

Brown on DCAT Exec. Comm.

Francis C. Brown, president of Schering Corp., has been elected to the executive committee of the Drug, Chemical and Allied Trades Section of the New York Board of Trade. He fills the vacancy left by Wm. M. Russell, Monsanto Chemical Co., who resigned shortly after his election in September in order to move to the company's St. Louis office.

50th Year with Tilden

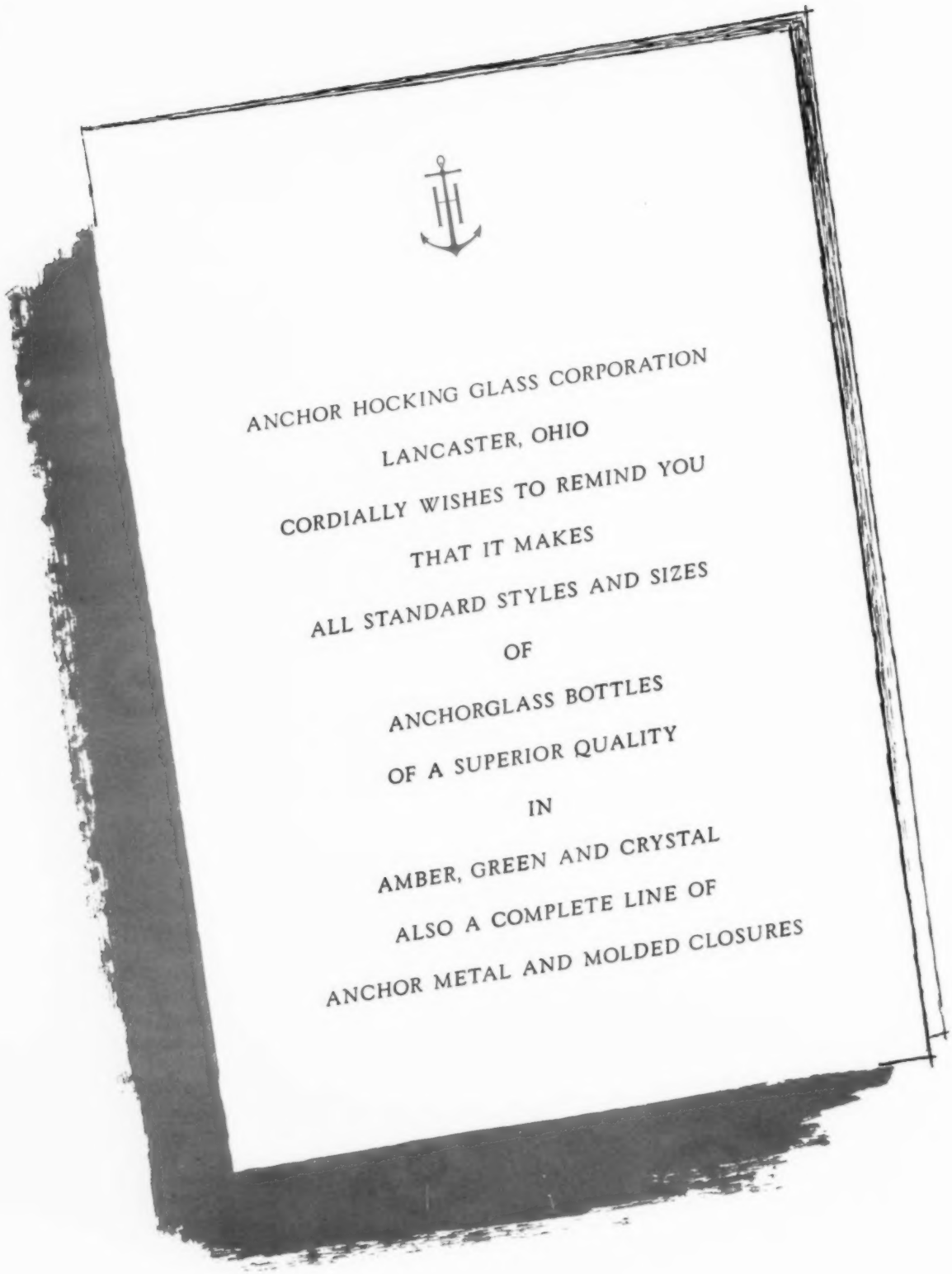
Mrs. Lois W. Rider, assistant secretary of the Tilden Co., New Lebanon, N. Y., completed 50 years of service with that company on November 16. The company employees gave a cocktail party in her honor, during which she received a television set.

Later on, Mrs. Rider enjoyed dinner with Mr. and Mrs. W. Gordon Cox, president of the company.

Dr. Robert A. Nelson, Jr., Department of Microbiology at Johns Hopkins, second from left, accepting the Kimble Glass Methodology Award at annual meeting of Conference of State and Provincial Public Health and Laboratory Directors November 9 at Statler Hotel, New York. Left to right: E. J. Rhein, Kimble Glass Co.; Dr. Nelson; Dr. I. H. Borts, director of Iowa State Hygienic Laboratory; and Dr. E. J. Sunkes, chairman of Conference and Director of Laboratory Services, Georgia Department of Public Health.

Hazel-Atlas Glass Company

WHEELING • WEST VIRGINIA


ANCHOR HOCKING GLASS CORPORATION
LANCASTER, OHIO
CORDIALLY WISHES TO REMIND YOU
THAT IT MAKES
ALL STANDARD STYLES AND SIZES
OF
ANCHORGLASS BOTTLES
OF A SUPERIOR QUALITY
IN
AMBER, GREEN AND CRYSTAL
ALSO A COMPLETE LINE OF
ANCHOR METAL AND MOLDED CLOSURES

In Penick Antibiotic Post

Wm. Burdell Baker has been appointed director of field sales for the antibiotic division of S. B. Penick & Co., according to Giles St. Clair, vice-president in charge of bulk pharmaceutical sales. He will concentrate on the sales promotion of Penick's antibiotics, particularly bacitracin, neomycin and tyrothricin.

Lilly Appointments

Kenneth F. Griffith has been appointed director of the market research division of Eli Lilly & Co., succeeding W. R. Spurlock who was promoted to executive director of merchandising. Mr. Griffith has been associated with this division since 1934 when he joined the company.

John S. Lynn has become administrative assistant to W. R. Spurlock, and Charles T. Dailey has been promoted to manager of the division's industry studies department. Mr. Lynn had formerly been manager of the management studies department, and Mr. Dailey, chief of the territorial operations department.

Expands Detroit Office

The Detroit office of Givaudan-Delawanna, Inc. and its associate companies, Givaudan Flavors Inc., and Sindar Corp., opened new and expanded offices last month at 18228 Mack Ave. The office is managed by R. M. Stevenson who is ably assisted by his son, James L. Stevenson. The telephone number is TUxedo 2-8405.

Named Pres., Geigy Pharms.

Ernst Hammer has been elected president of Geigy Pharmaceuticals, division of Geigy Chemical Corp. He was instrumental in organizing Geigy Pharmaceuticals and has since directed its expansion in both research and distribution.

Annual Fall reception and cocktail party of Givaudan-Delawanna, Inc., which was held on November 12 at University Club, New York. Over 300 members of the perfume, cosmetic and allied industries attended.

Givaudan Cocktail Party

Over 300 members of the perfume, cosmetic and allied industries were present at the annual Fall reception and cocktail party of Givaudan-Delawanna, Inc. which was held at the University Club, New York, on November 12. Andre Givaudan, who was visiting this Country at the time, was able to meet his many friends at the party. A few days after the reception, Mr. Givaudan returned to Europe.

New Cinn. Office for Heyden

Heyden Chemical Corp. has opened a new sales office in Cincinnati in the Paramount Building, 720 East McMillan St., according to Simon Askin, president. T. H. Risch, previously assigned to Heyden's Chicago branch office, has become manager of the Cincinnati office.

Mittleman in Schenley Post

Budd Mittleman has been appointed advertising and sales promotion manager of Schenley Laboratories, Inc. He had formerly been associated with Douglas McAdams, Inc., as vice-president of its subsidiary, the Medimetric Institute.

Drukker with Lakeside

Dr. Alexander E. Drukker has been added to the staff of Lakeside Laboratories as senior research chemist.

Pfizer Plant in Philippines

Chas. Pfizer & Co. is planning to establish a plant for making dosage forms of Terramycin and other pharmaceuticals in the Philippine Islands, according to John E. McKeen, president and board chairman. Mr. McKeen made the announcement at a dinner in Brooklyn during which the Pfizer firm received the first annual Goodwill Award of the Filipino Youth Organization of New York.

The award was presented to Pfizer for "outstanding leadership in the field of human relations in industry and for showing the Filipino employees of the company an example of commendable and wholehearted understanding between the peoples of America and the Philippines."

Main, Eaton Advg. Manager

Rolland J. Main has been appointed advertising manager for Eaton Laboratories according to Melvin C. Eaton, president. He had formerly been medical editor of a New York advertising agency.

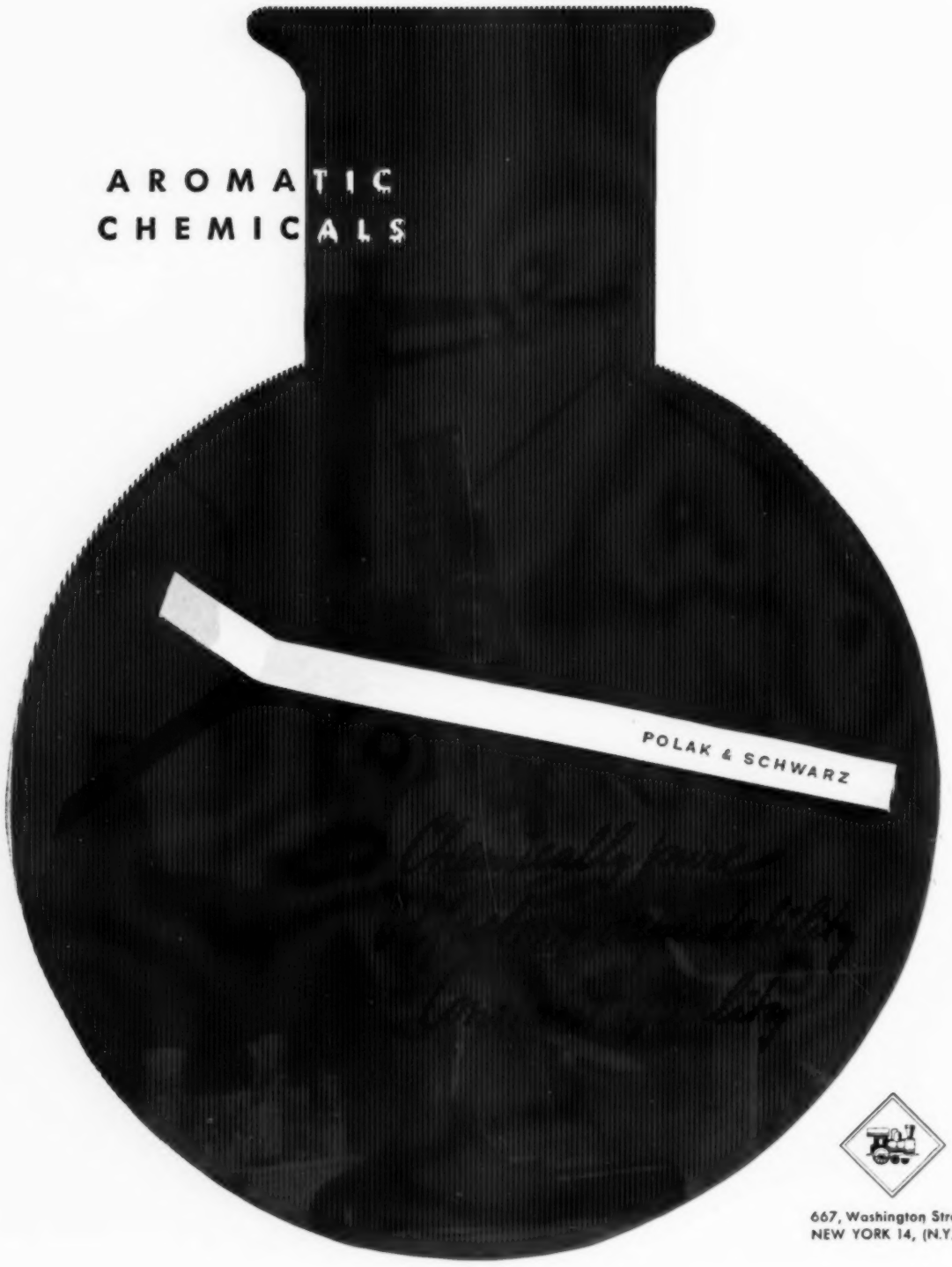
Promoted by Mathieson

James E. McMahon, controller for Lentheric, has been appointed controller of the Squibb domestic and Lentheric divisions, of Mathieson Chemical Corp., according to Robert L. MacKenzie, Mathieson assistant controller, and controller of the Squibb divisions.

ERNST HAMMER

DR. ALEXANDER E. DRUKKER

JAMES E. McMAHON



667, Washington Street
NEW YORK 14, (N.Y.)

PERFUMERY SPECIALTIES - ESSENTIAL OILS - AROMATIC CHEMICALS

GEORGE J. TOMBAK

NORMAN F. STORM

JOHN L. CASSULLO

Tombak Forms Reynaud, Ltd.

George J. Tombak, associated with the aromatics section of E. I. du Pont de Nemours & Co. for the past 20 years, recently announced the formation of Reynaud, Ltd., of which he is president and founder.

The new company, located at 355 West 52nd St., New York, makes available a full line of essential oils, natural floral oils, perfume compounds, aromatic chemicals, flavors and specialties.

Reynaud, Ltd., is the exclusive representative for H. Reynaud et Fils, well-known French supplier, and will handle the firm's French, French-Colonial, Spanish and Far-Eastern essential oils.

Promoted by Nopco

Robert F. McClellan, formerly midwest district manager of Nopco Chemical Co., has been appointed vice-president and general manager of Yocum Faust, Ltd., London, Ont., Nopco subsidiary and major Canadian producer of industrial processing chemicals.

One of his first duties, according to Thomas A. Printon, president of Nopco, will be to direct the additions to the Canadian plant which are now under way.

Squibb Exec. Changes

Harry W. Wilkinson has been named manager of professional products, E. R. Squibb & Sons, according to W. R. McHargue, vice-president.

Roland L. Schlick was recently promoted from manager of the Chicago sales district to assistant manager of professional products and will work with Mr. Wilkinson in that department.

Pinotti, V.P., Kimble

Fred D. Pinotti has been elected a vice-president and member of the board of directors of Kimble Glass Co., subsidiary of Owens-Illinois Glass Co.

Storm Retires from Ciba

Norman F. Storm has resigned as executive vice-president of Ciba Pharmaceutical Products, Inc., according to the board of directors, effective December 31. Mr. Storm has sought early retirement from active participation in company affairs for reasons of health; however, he will continue in a consulting capacity.

He joined the production department of Sharp & Dohme in 1918 where he remained until 1929, when he became production manager at Ciba. He was promoted to vice-president in charge of production in 1943, and executive vice-president in 1949. Mr. Storm served as section chief of the Drug and Cosmetic Section of the N.P.A. in Washington during 1951. When he left the N.P.A. at the end of that year, he was deputy chief of the Drug and Cosmetic Branch of the Chemical Division.

O'Sheil, Kolar V.P.

Chester O'Sheil has been elected vice-president in charge of manufacturing of Kolar Laboratories, according to George G. Kolar, president. He will also continue as general manager.

New Laboratories for D&O

Dodge & Olcott, Inc. introduced its newly-constructed laboratory facilities to the trade and consumer press at a cocktail party on November 20. John L. Cassullo, president, invited the guests to visit the nine new laboratories—two of which were still under construction—while the company technical personnel was on hand to answer any specific questions. The new facilities include a product development department, as well as new laboratories for work on specific problems in flavors for the food, confectionery, beverage and pharmaceutical industries, and perfume bases for cosmetic and industrial application. The organic-synthesis and analytical laboratories were still under construction, while an aerosol-testing laboratory will soon be started.

Named Advertising Mgr.

Grace Kennedy McClatchy has been appointed advertising manager of the International division, Bristol-Myers Products division. She has been associated with the company for 11 years in the field of export advertising.

Robert H. Gugler, of the Upjohn Co., taking a turn at wheel of Corvette recently acquired by Monsanto Chemical Company's organic chemicals division. Jerry Pauley, Monsanto sales manager of pharmaceutical chemicals, took Mr. Gugler for a spin and ended up by letting him drive.

END OF REPORT—
HOW MUCH *DOES* IT COST?

THIS is the last of a series of advertisements designed to acquaint the members of the Toilet Goods Industry with a few of the services which the Toilet Goods Association performs for them. If you have read the individual advertisements you may have wondered about two things: If you are now a member, how can anyone afford not to be? If you are a non-member, how much does it cost to belong?

OUR SLIDING scale of dues payments has so far as we know never been published. We believe it should be for two reasons: to still the misapprehension that membership is unduly expensive—and to show that large and small members fairly share the not inconsiderable cost of maintaining your Association.

EVERY MEMBER checks one of these blanks each year.

January 1 19 54

PROMINENT TOILET GOODS COMPANY

9876 Broadway, American City.

To THE TOILET GOODS ASSOCIATION, INC.
9 ROCKEFELLER PLAZA
NEW YORK 20, N.Y.

ANNUAL DUES FOR THE YEAR ENDING DECEMBER 31, 19

Our annual net Toilet Preparations Sales place us in the following category:	Annual Dues
☐ Less than $ 100,000.00 a year	$ 75.00
☐ Less than $ 175,000.00 a year	$ 125.00
☐ Less than $ 250,000.00 a year	$ 200.00
☐ Less than $ 500,000,00 a year	$ 400.00
☐ Less than $1,000,000.00 a year	$ 800.00
☐ Less than $2,000,000.00 a year	$1,500.00
☐ More than $2,000,000.00 a year	$2,500.00

(Check with "X" class in which you place your firm and enclose your check in the proper amount)

ASSOCIATE Members pay a flat rate of $100.00 per year.

THAT is the story! And thank you for reading these advertisements. We hope you liked them.

THE TOILET GOODS ASSOCIATION, INC.
9 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

D&O Nat. Sales Meeting

Dodge & Olcott, Inc. held its national sales meeting at the Hotel New Yorker during the week of October 19. It was attended by sales personnel from all nine branches located throughout the country.

The greater part of the program was devoted to talks by the technical personnel who brought the sales staff up to date on laboratory service and product development.

During the perfume sessions, fragrances for cosmetics and industrial odorants were discussed by Gus Schwindeman; aerosol perfuming, by Herb Kainik; French perfumery, by Mysie Emmet; household deodorants, by Jim Puglis; and general topics by John Lyons.

Claude Johnstone, of the flavor laboratories, discussed the plans for next year and was followed by Jack Hohhof, Bill Lasthuysen, Frank Pond and Charles Dwyer who also spoke on various aspects of the flavor field.

Administrative and organization subjects were taken up during the first morning session by F. H. Leonhardt, Sr., chairman of the board; John L. Cassullo, president; V. H. Fischer, vice-president; F. H. Leonhardt, Jr., secretary and vice-president; Jules Bauer, coordinator of sales; Ruth Farnworth, advertising manager; and Paul Sperry, sales manager.

The meeting was rounded off by a visit to the offices and new laboratories in the Dodge & Olcott Building where special tests and demonstrations were prepared by the technical personnel.

Dodge & Olcott Inc. sales personnel attending company's National Sales Meeting during week of October 19. Seated, left to right: Bill gray, Ed Spellman, Ed Wyluda, Frank Murdock, Al Birsner, Earl Kersten, Lou Mignacca, Paul Sperry, George Collins, K. Hartley and Tom Callahan. Standing, Chet Smith, Bob Heidt, Joe Fortescue, J. O'Mara, Bill Arko, Jack Melody, Jules Bauer, Fred Perrone, John Gallagher, Jim Dugan, Neil Grace, H. Bachmann and John Thompson.

New Building for Atlas

Atlas Powder Co. last month began work on a new administrative headquarters which will cost about $2.7 million and is scheduled for completion early in 1955. It will house Atlas' present 400 general-office employees.

Merry Retires from Bayer

Frank H. Merry, general plant manager of the Bayer Company division, Sterling Drug Inc., will retire on January 1, after 43 years of consecutive service.

He is being succeeded by Robert R. Ekelmann, who has been associated with Sterling for 36 years and was formerly manager of the Rahway, N. J., plant of the company's Centaur-Caldwell division.

Mr. Ekelmann, in turn, is being succeeded by Robert L. Stevenson as manager of plant operations for Centaur-Caldwell.

Mr. Merry is one of the oldest employees in point of service in the Sterling organization, having joined the Bayer Company in 1911, assigned to the paper-box department in the plant. He was appointed supervisor of packaging operations in 1913. He went to Trenton, N. J., in 1942, when packaging operations were transferred there. He became general manager in charge of all manufacturing, packaging and distribution operations in 1947, when all of these departments were centralized in Bayer's modern Trenton plant.

Foragers to Honor Keeley

C. R. Keeley, vice-president, *Beauty Fashion*, will be guest of honor at the annual banquet of the Foragers of America on January 8, 1954, Midston House, New York, according to George F. Zinnell, Foragers president. Joseph Keho, president, Dorothy Gray, will act as toastmaster, and H. Gregory Thomas, president, Chanel, will be guest speaker.

Beavers Wins Cup

Frank W. Beavers, Cincinnati technical representative for the synthetics department of Hercules Powder Co., won the Governor's Cup of the Cincinnati Drug & Chemical Association for low score at the annual golf tournament of the Association, held recently at the Kenwood Country Club.

The presentation was made at the first fall dinner meeting at the University Club by Louis W. Wahl, district sales manager for Diamond Alkali, and chairman of the golf committee. Owen G. Sexton, assistant to the president of H. Blacker Printing Inks, Inc., and president of the Association, presided at the meeting.

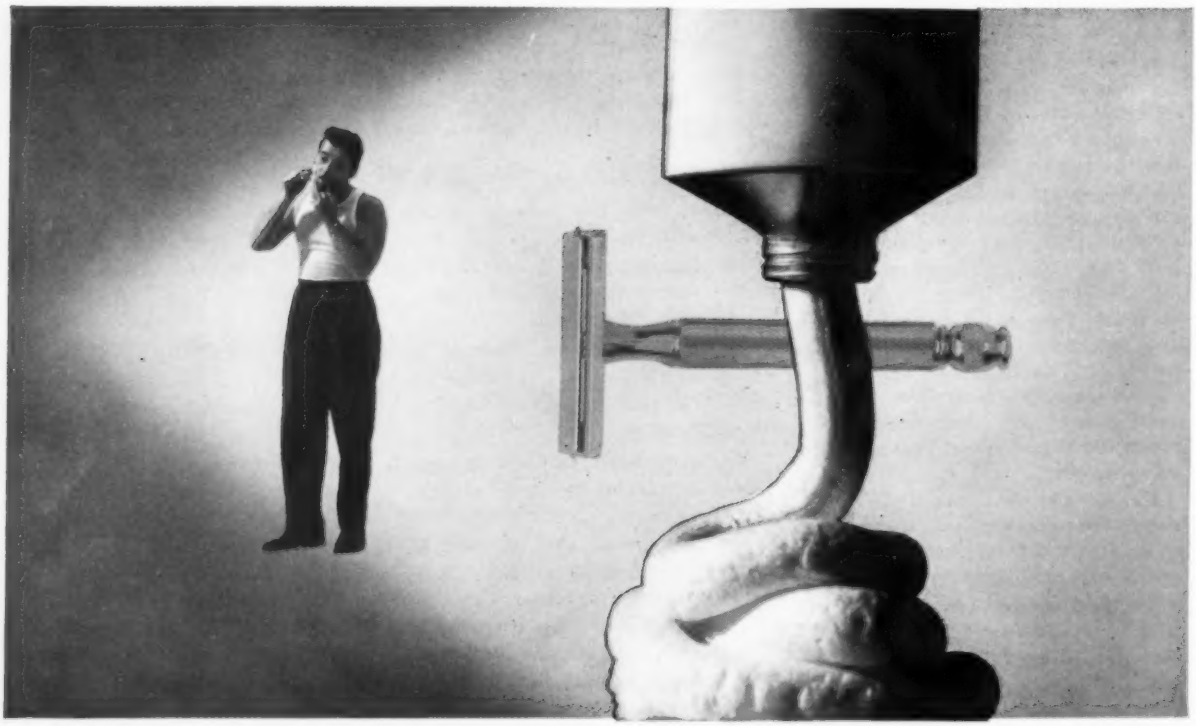
ROBERT L. STEVENSON

ROBERT R. EKELMANN

FRANK W. BEAVERS

DOW PROPYLENE GLYCOL, U.S.P., MAKES BRUSHLESS SHAVE CREAM SMOOTHER

This effective coupling agent improves consistency and creaminess . . . offers similar advantages for other drug and cosmetic products



If you're looking for a better coupling agent, you can benefit from the experience of brushless shave cream manufacturers who have found that Dow propylene glycol, U.S.P., gives their product desired consistency, contributes to the creaminess, and also produces that popular, pleasant "after feel."

Propylene glycol has a record of many other successful applications based on its valuable properties as a solvent, humectant, lubricant and preservative. Most important to manufacturers of creams, lotions and similar products is the emollient property of propylene glycol, which gives a soothing and softening effect without undesirable residual stickiness.

In the manufacture of approved and accepted medicinals, propylene glycol, U.S.P., provides a safe and effective solvent for a wide range of preparations—for internal consumption, topical application or injection.

Dow propylene glycol, U.S.P., may improve your product, help you bring that new product out of the lab. Try a sample at our expense—write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. OC 3- 32A

you can depend on DOW CHEMICALS DOW

New Building for Yardley

Yardley of London (Canada) Limited opened a new building in September on a wooded 16-acre ravine site in East York Township. Involving an investment of nearly $1 million, Yardley's new Canadian home, which provides complete facilities for Yardley in Canada, occupies only 80,000 square feet of the site, the balance to be devoted to parkland.

The first Canadian company of Yardley was formed in 1900, but within a few years, the per capita Canadian sales were higher than in any other country in the world. As a result, a new eight-story office building and plant was erected in 1930 to fill the rising demand.

Among the notable guests attending the reception at the opening of the plant were Peter P. Powell, managing director, Yardley in Canada; Jake Manheimer, J. Manheimer; Phil C. Smith, president, Yardley of London Inc., New York; and Rodney T. Gardner, managing director, Yardley & Company Ltd., England.

New Canadian home of Yardley of London situated on a wooded 16-acre ravine site in East York Township. The $1-million building provides complete facilities for Yardley in Canada.

Shell Moves N. Y. Offices

Shell Chemical Corp., formerly at 500 Fifth Ave., moved to 380 Madison Ave., New York 17, on December 1. The new telephone number is OXford 7-3311.

Massengill Promotions

Harry R. Frehn has been appointed executive vice-president and general manager of all the pharmaceutical corporations of the S. E. Massengill Company. His former position of vice-president and general manager of the Bristol division, has been filled by Frank W. DeFriece, Jr., who, as plant superintendent, has assisted Mr. Frehn during the past seven years.

R. T. Krepela, formerly advertising manager, has been appointed director of marketing, in charge of advertising, promotion and market research of all the Massengill corporations.

New Plant for Johnson

Johnson & Johnson is building a new major plant in the San Francisco Bay area, according to George F. Smith, president. This is part of an organization-wide expansion program for the West Coast. Ground has already been broken in Sunnyvale, Calif., for the Pacific Coast plant of Personal Products, Inc., a Johnson & Johnson affiliate.

Wehmer Named Rhodia Rep.

J. E. Wehmer, formerly with E. I. du Pont de Nemours & Co., has been appointed Midwest representative, Rhodia, Inc., with headquarters in Chicago at 10623 Calumet Ave. Prior to his du Pont position, Mr. Picard had been with Rhodia Chemicals Co. for many years.

Named to Hoover Commission

Dr. Theodore G. Klumpp, president of Winthrop-Stearns Inc., has been appointed a member of the medical services division of the Hoover Commission. Objectives of the group are to provide better medical care for beneficiaries of the federal medical program; create a better foundation for training and medical service in federal agencies; reduce the drain of doctors away from private practice; provide better organization for medical research; and to provide a better state of medical preparedness for war.

Celebrate Takamine Anniv.

The 100th anniversary of the birth of Dr. Jokichi Takamine, the founder of Takamine Laboratory, Inc., oldest manufacturer of industrial enzymes in the United States, was celebrated the first week of November at his home town, Kanazawa City, Japan. This celebration was attended by Mrs. Even T. Takamine, president of Takamine Laboratory, and widow of Dr. Takamine's younger son; Homer C. Fritsch, executive vice-president of Parke, Davis & Co., and a member of the Takamine board of directors; and by Mrs. Fritsch. Also attending the ceremonies were the 20 Japanese students who have received the Dr. Takamine Award under the direction of Kanazawa University. This annual student award is supported by Takamine Laboratory.

Fettinger Named Ass't Mgr.

John H. Fettinger, Sr., has been appointed manager of Robert Gair Company's Thames River, Conn., division, according to Norman F. Greenway, vice-president in charge of folding-carton operations. Mr. Fettinger started with the company in 1912 at its Brooklyn plant, subsequently going to the Piermont, N. Y., plant, and, in 1939, to Cleveland where he took charge of production and sales at the carton division.

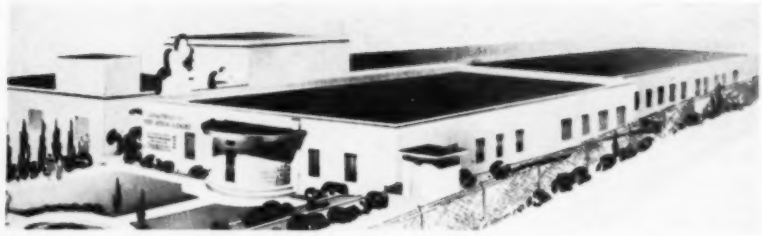
HARRY R. FREHN

R. T. KREPELA

JOHN H. FETTINGER, SR.

New Lab. for Merrell

The Wm. S. Merrell Co. will soon break ground for a new Gerontological Laboratory, another step in its $2-million program of expanding pharmaceutical research. This is the fourth major expansion project undertaken since 1946.



New Gerontological Laboratory of the Wm. S. Merrell Co. which is celebrating its 125th anniversary. This building, fourth major development since 1946, is the next step in a $2-million expansion program.

Roubechez Buys Naugatuck

Roubechez, Inc., has purchased the assets of the aromatic chemicals department of Naugatuck Chemical division, United States Rubber Co., according to Francis H. Sloan, Roubechez president. The purchase included equipment and inventories, formulas and chemical processes, but no real estate. The aromatic chemicals department, which operated under the name of Naugatuck Aromatics, processed aromatic chemicals, imported essential oils, and compounded finished specialties for the perfume industry.

Mr. Sloan stated that the acquisition of Naugatuck Aromatics will permit Roubechez to complete its line of chemicals and also increase its sales organization. The company will now have sales offices in Chicago and Cincinnati, as well as New York and Toronto, Canada.

Harold J. Edmon, manager of Naugatuck Aromatics, has become vice-president of Roubechez, while Roy Huttelston, chief perfumer, and the entire personnel of the Chicago office, will become part of the Roubechez organization.

Vaughn, V.P., Colgate

Dr. Thomas H. Vaughn has been elected vice-president in charge of research and development, Colgate - Palmolive Co., according to E. H. Little, chairman of the board. He resigned from a similar position at Wyandotte Chemicals Corp. to accept the Colgate post.

DR. THOMAS H. VAUGHN

Calvert Mills Moves

The Calvert Mills Co., import agents, have moved from 15 Whitehall St. to new offices at 44 Whitehall St., New York. This firm is the exclusive representative for Lanitis Bros. Ltd., Limassol, Cypress; Maurice Vergoz, St. Denis, Reunion; and for the House of Bernard, St. Leger, d'Orange, France.

Boyer with Pitman-Moore

Dr. Philip A. Boyer, Jr., has been appointed to the scientific staff of Pitman-Moore Co., according to Dr. C. A. Bunde, director of research. He will assist Dr. Bunde in the clinical research program.

Aceto Adds to Line

Aceto Chemical Co. recently added sodium lauryl sulfate to its line of fine cosmetic and pharmaceutical raw materials.

Fisher In Controllers Inst.

Vincent L. Fisher, controller, Sharp & Dohme division, Merck & Co., has been elected to membership in the Controllers Institute of America.

Frediani Marks 25th Year

Amerigo Frediani, Pacific Coast representative for Roure-Dupont, Inc., recently celebrated his 25th anniversary with the firm. He was first connected with the New York office in 1928, later going to the West Coast.

AMERIGO FREDIANI

Hamilton Brinsley Bush

Hamilton Brinsley Bush, joint managing director of W. J. Bush & Co., Ltd. of London, died recently after a brief illness. His most unexpected death brings to a close 33 years of loyal and devoted service to the company.

George R. Parkinson

George R. Parkinson, founder and president of Parkinson Perfumes, Inc., Katonah, N. Y., died November 30 of a heart ailment. Mr. Parkinson, who was 52 years old, was born in England. He was engaged for twenty years in France as creator of perfumes for Schiaparelli, and came to this country in 1940 as vice-president of Parfums Schiaparelli, Inc.

A short time later he established his own business and for a time was consulting perfumer to Richard Hudnut. About five years ago he moved his business to Katonah.

Arthur C. Schoenewaldt

Arthur C. Schoenewaldt, a founder and partner in Schmitz-Schoenewaldt-Turner Co., New York, died in Brooklyn on November 18 at the age of 62. His first job was with Merck & Co., after which he became vice-president of George Uhe Co. At the time of his death, Mr. Schoenewaldt was chairman of S.S.T. Corporation, an affiliate of Schmitz-Schoenewaldt-Turner.

Howard E. Wright

Howard E. Wright, former district manager of the Armstrong Cork Company glass and closure division's New York office, died at his home in Caldwell, N. J., on November 7. He was 80 yeard old. He joined the company as a clerk in 1892 and entered the sales force in 1895. He was promoted to district manager in 1937, after 42 years as a salesman, which post he held until his retirement in 1944.

None of his immediate family survives.

WARDIA IS ACKNOWLEDGED BY THE WORLD'S LEADING PERFUMERS TO BE THE FINEST OF ALL ROSE SPECIALTIES

FIRMENICH & CIE.
SUCCESSEURS DE
CHUIT, NAEF & CIE.
GENEVE SUISSE

FIRMENICH INCORPORATED

250 WEST 18TH STREET, NEW YORK 11 • FIRMENICH OF CANADA, LIMITED, 348 WALLACE AVENUE, TORONTO • CHICAGO OFFICE: 612 NORTH MICHIGAN AVENUE • GENEVA • PARIS • LONDON

FIRMENICH . . .

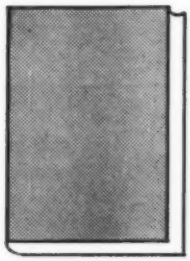
AND THE

SCIENCE OF FRAGRANCE

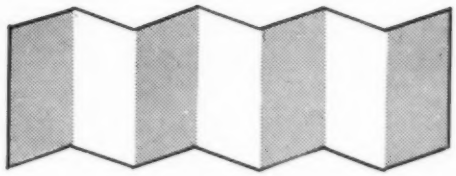
It is gratifying to us that our ethical contribution to fragrance creations helps so many perfumers achieve originality and distinction in their products. In their use of specialties by Firmenich, they enjoy working with basic materials of the highest fidelity, concentration and olfactive purity. To the science of fragrance, and to those whose skill and imagination keep it ever exciting and constantly expanding, Firmenich continues its contribution by new discoveries and development.

FIRMENICH
INCORPORATED

250 WEST 18TH STREET, NEW YORK 11 • FIRMENICH OF CANADA, LIMITED, 348 WALLACE AVENUE, TORONTO • CHICAGO OFFICE: 612 NORTH MICHIGAN AVENUE • GENEVA • PARIS • LONDON



Trade Literature



Day's Pharm. Machinery

The J. H. Day Company, Dept. 21, 1145 Harrison Ave., Cincinnati 23, Ohio, has issued a new booklet entitled Pharmaceutical Machinery, which is one of a series of booklets prepared for the various industries that Day serves. The booklet covers problems of tablet granulation and ointment preparation and recommends specific equipment for different processes. Data sheets give complete specifications on Day equipment used in the pharmaceutical industry, including dispersion mills, mixers, blenders, gyrating screens, and roll mills. Industries served by Day include pharmaceutical, cosmetic, soap, rubber, paint and varnish, chemical, food, paper and pulp, ceramics, candy, explosives, sugar, and milk products.

Organic Chemicals

Physical Properties of Synthetic Organic Chemicals is the title of a 20-page booklet issued by Carbide and Carbon Chemicals Company, 30 East 42 Street, New York 17. Issued annually, this 1954 edition presents data on more than 330 products and features 36 new chemicals. The publication is known as the P.P.S.O.C. Booklet F-6136.

Horix Fillers

Horix Manufacturing Company, Carliss Station, Pittsburgh 4, has issued a 4-page illustrated bulletin describing its complete line of filling equipment for handling still liquids and semiliquids.

Reilly Chemical Index

Reilly Tar & Chemical Corporation, 1615 Merchants Bank Building, Indianapolis 4, Ind., has issued a new edition of the Reilly Chemical Index, an 8-page booklet describing 60 compounds including acetylenic alcohols, fused ring heterocycles, hydrocarbons, phenol and substituted phenols, pyridine and pyridine derivatives.

Glycerine Versatility

Versatility of glycerine in commercial formulations is the subject of a new bulletin issued by the Glycerine Producers Association, 295 Madison Ave., New York 17. The booklet discusses six properties of glycerine and shows how manufacturers have put them to work in new products. Glycerine's functions as an emollient in a new calamine lotion, as the humectant in a new eye lotion base, as a vehicle for a new tonic for anemia, as a demulcent in a new detergent aerosol used to lessen respiratory difficulties of infants, as a solvent for a new digitalis injection, and as a plasticizer in a new sausage casing are detailed.

Undecylenic Acid

The Baker Castor Oil Company, 120 Broadway, New York 5, has issued a 19-page bulletin containing a literature search on undecylenic acid and its derivatives.

Pony Labelrite

New Jersey Machine Corporation, 1610 Willow Ave., Hoboken, N. J. has issued an 8-page folder giving information on the Pony Labelrite, and covering a number of features that have not appeared in the catalog before, some of them recently developed. For instance, the ability of the Pony Labelrite to handle labels in roll form with a "cut-off" of extreme precision registry. Also the application of decalcomanias should be of interest since they permit the use of additional decoration without the excessive cost of printing directly on glass. A third feature is the versatility which puts the Pony Labelrite in the category of accomplishing "pick-up-and-place" jobs.

Methionine Booklet

What Methionine Can Do For You is the title of a new 16-page booklet issued by U. S. Industrial Chemicals Co., Division of National Distillers Products Corporation, 120 Broadway, New York. The booklet covers the use of methionine in manufactured feeds, with particular emphasis on feeds for turkeys and chickens as well as a general discussion of its present status and its future in dog and mink feeding.

New for Laboratory

Scientific Glass Apparatus Co., 101 Lakewood Terrace, Bloomfield, N. J., has issued a new 24-page edition of What's New for the Laboratory. New items include heating mantles with aluminum housings, new ovens, a sterile fluids pump, glass fraction cutter, chromatography equipment, ultra-violet lamps, automatic glassware washer, and rapid-scanning spectrophotometer.

PVP Booklet

General Aniline & Film Corporation, 445 Hudson Street, New York 14, have issued new product bulletin No. P-100 which is a 24-page booklet on Plasdone, which is the company's brand of PVP or polyvinylpyrrolidone. Known primarily as a blood volume expander, PVP is said to have an almost infinite number of uses in the pharmaceutical and cosmetic fields including hair lacquers, shaving creams, antibiotic preparations, and detoxifying agents in treatment of tetanus and diphtheria.

Operator pours tablet compound into a Stokes Model DS-3 tabletting press in the Hawthorne, California plant of Strong Cobb & Co., Inc. 30,000 to 60,000 tablets are produced per hour by this method.

Finished tablets, after coating, as produced on Stokes presses at Strong Cobb & Co., Inc., world's largest private formula manufacturer.

"How well we do our work may decide whether someone lives or dies"

This legend is posted over the employee's entrance at the Strong Cobb & Co., Inc., plants in Cleveland, Ohio and Hawthorne, California. It typifies the unceasing vigilance with which this firm, the largest private formula manufacturer in the world, has worked since 1833 to produce pharmaceuticals of the highest quality.

Tablets, in approximately 1000 different sizes, shapes and forms, are turned out on four Stokes rotary tabletting presses at the new Hawthorne, California, plant of Strong Cobb & Co., Inc. Production ranges from 30,000 to 60,000 tablets per hour, depending upon the material used. Yearly production runs well over one and one-half billion tablets.

All Stokes tabletting presses, whatever the size of tablet or speed of operation, produce tablets perfect in size, weight, density and finish, with maximum efficiency and little labor. Pharmaceutical manufacturers may consult with the Stokes Advisory Service and Stokes field engineers, without obligation, on such problems as tablet formulae, punch and die design, and improved manufacturing and operating procedures.

Send for Catalog No. 800, "Stokes Tabletting Presses", and for Catalog No. 600, "Stokes Pharmaceutical Equipment".

F. J. STOKES MACHINE COMPANY
PHILADELPHIA 20, PA.

STOKES

STOKES MAKES: High Vacuum Equipment, Vacuum Pumps and Gages / Industrial Tabletting, Powder Metal and Plastics Molding Presses / Pharmaceutical Equipment

Management Forum

by Francis Chilson
INDUSTRIAL CONSULTANT

Retrospect

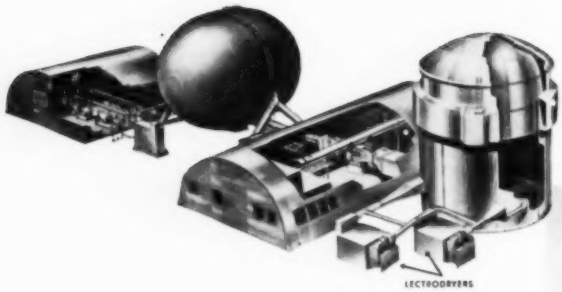
I have been associated with the drug and the cosmetic industries long enough to look back upon three decades, and therefore have observed changes that are taking place so fast that younger men in the industry scarcely notice them.

In looking back over the history of these two great, related industries this remarkable fact stands out: they are both very young industries. Prior to World War I the cosmetic industry could be said to have been almost non-existent. Prior to that time the gestating industry sold only cold cream, perfume, toilet water, cologne, talcum powder, theatrical specialties and hair preparations. Many of the large firms of today grew out of beauty shops, or, as they were then called, "hairdressing salons." By present standards all the firms in the industry were small. In 1918 probably not more than three of them were doing a volume of business in excess of $1,000,000 annually.

By 1930 several cosmetic firms were selling more than $1,000,000 annually, and probably a dozen were doing a volume of business in excess of $4,000,000. In that year, however, a cosmetic firm doing a business of $25,000,000 a year was not only unheard of but unthought of. If any optimist then had stated that within twenty years hence a million-dollar firm would be considered a *small* firm, and that some firms would be climbing steadily toward $50,000,000 annually, he wouldn't have been considered merely a dreamer—he'd have been considered insane. I now predict that within the next twenty-five years we shall have some cosmetic firms who will be well on the way to $100,000,000 annually. This growth is inevitable because of the widening spread of cosmetic usage, particularly among men and children, and also because our expanding population will have reached at least 175,000,000 people by 1975.

Up to 1920 can be considered the age of the pharmacist in the cosmetic industry. There was no research as we know it now, and I doubt if in the entire industry there was a single chemist with a bachelor's degree. Toward the end of the twenties a few chemists began to take over from the pharmacists and some research began. By the forties there were a lot of chemists in the cosmetic industry, captained by a rapidly growing corps of PhD's. By 1950 the industry supported a small army of chemists and, now, Ph.D's in the industry are more numerous than fiddlers in hell. But the industry still has a very long way to go to equal the scientific maturity of the pharmaceutical industry.

Let's look now at the pharmaceutical industry. Up to 1920 the industry as a scientific institution can be discounted very heavily. It was also the age of the pharmacist who had been trained, as they still are being trained in the majority of instances, to run retail drugstores. The pharmacist was a compounder. Almost every new drug or chemical he heard about he put into his formulas. The result was some wonderful shotgun formulas that contained everything, including Mrs. Murphy's chowder. While many fundamental discoveries had been made prior to 1920—many of them indeed by pharmacists or physicians—the pharmacist, working in pharmaceutical laboratories (in the majority of instances they weren't then called research laboratories) didn't have enough organic chemistry to know that many of the ingredients he added to his formulas reacted with other ingredients already in them and the resulting compounds precipitated out, or, if they remained in solution, were rendered therapeutically ineffective. Many of the older chemists in the pharmaceutical industry will remember going over some of those wonderful old formulas which more often than not contained fifteen or twenty ingredients. In those days, and indeed right up until a few years ago, the ingredients of many pharmaceutical formulas were still weighed out to the last grain even though the batches might total a half a ton or a thousand gallons each. The



Snow in a Wind Tunnel? Under stratospheric conditions normal air would cause a blizzard in a wind tunnel. Lectrodryers DRY three tons of air per minute here so this won't happen.

What in the world do you want to DRY?

You can DRY air or gases in volume to predetermined dewpoints as low as −110° F . . . to a relative humidity as low as 5% . . . even at pressures up to 6,000 psi.

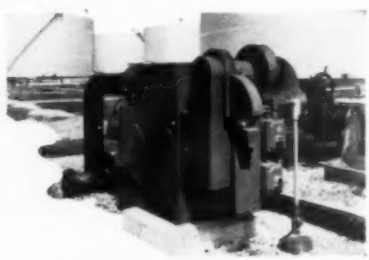
You can DRY organic liquids to a moisture content as low as 3 or 4 parts per million, or less.

All over the world Lectrodryer* machines are DRYing air, other gases and organic liquids to precise, low conditions, meeting the needs of industry and science. The examples illustrated show only a few extraordinary problems solved by Lectrodryers. There are thousands of everyday DRYing jobs being done successfully with these machines.

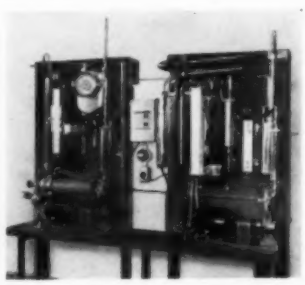
Write for *Because Moisture Isn't Pink*, a booklet describing Lectrodryers, their operation and function. Request engineering advice if you desire.
Pittsburgh Lectrodryer Corporation,
305 32nd St., Pittsburgh 30, Pennsylvania.

DRY Cement. High humidity and miles of ocean surround this cement ship. A Lectrodryer feeds DRY air to cement storage compartments, to keep cement DRY and powdery.

Safeguarding a Fortune. Philadelphia Museum art treasures require DRYness to prevent deterioration. A Lectrodryer keeps humidity low by feeding clean DRY air as required.



Protects Petroleum. Moisture condensing in storage tanks contaminates petroleum products. A Lectrodryer eliminates this problem by DRYing air breathed into tanks.



Saves Life. This machine samples carbon monoxide in highway tunnels. Lectrodryers DRY the air samples, assuring accuracy of reading by the automatic monoxide recorder.

DRYing Secret. What Lectrodryers are DRYing on Air Force crash trucks is "restricted" information. The DRYness specified is being adequately met by Lectrodryers.

In England: Birlec, Limited, Tyburn Road, Erdington, Birmingham.
In France: Stein et Roubaix, 24 Rue Erlanger, Paris XVI.
In Belgium: S. A. Belge Stein et Roubaix, 320 Rue du Moulin, Bressoux-Liege.

LECTRODRYERS DRY WITH ACTIVATED ALUMINAS

LECTRODRYER

*REGISTERED TRADEMARK U.S. PAT. OFF.

initial drugstore formulas were simply multiplied to bring them up to scale.

While we have several pharmaceutical firms now that have passed the $100,000,000 mark, it is difficult to realize that in 1920 there were probably not more than two dozen firms in both the proprietary and ethical branches of the industry that had crossed a million dollars annually. Research as a serious industry-wide concern did not begin in the pharmaceutical industry until the middle twenties, although there were isolated instances of serious research endeavor by a few of the larger firms such as Parke-Davis, Lilly and Upjohn prior to 1920. Parke-Davis established a research laboratory as such at the turn of the century, hence I believe P-D's is the oldest research laboratory.

In the twenties Ph.D.'s in organic chemistry, pharmaceutical chemistry and pharmacology were recruited in droves by the pharmaceutical industry. In the thirties physical chemists were added to broaden the base of research. In the forties physicists were added to broaden the base of research still further.

Illustrative of the thinking that prevailed in high quarters prior to the advent of the antibiotics was the question put to me by the president of a pharmaceutical concern which then (1937) was doing a volume of $10,000,000 annually. He asked my opinion on whether he was being unrealistic in projecting a $50,000,000 goal in twenty-five years. As an illustration of the rapid growth of the industry, this firm reached almost $50,000,000 only ten years later. The virility of the industry and the value of good management and good research is attested by the meteoric growth of the Searle organization which multiplied its annual volume twenty-five times in less than as many years. And in both cases this was done without antibiotics.

I predict that in the next twenty years at least a half dozen firms in the pharmaceutical industry will have reached the $200,000,000 mark.

The phenomenal growth of the drug and of the cosmetic industries attests the unimaginable vitality and fecundity of our great free enterprise economy.

Although adjustments in both industries are taking place which has given rise to some pessimism about the immediate future, it is my conviction, borne of an intimate knowledge of so many firms in both of these great industries, that the performance of the past merely adumbrates the colossal growth of the future. The adjustments now taking place are merely strengthening the foundations for that inevitable future growth.

I would like to review once again the basic economies of this perennial problem: branch plant operation. In the past I have insisted as a result of factual studies that except in unusual circumstances very few drug or cosmetic firms are large enough or are growing rapidly enough to justify the operation of a branch plant on the basis of freight saving alone. But the tendency in freight rates of all kinds is steadily upward and the time may come when freight rates will be so high that it might become profitable to split production among one or more plants.

Branch Plant Operation

I would like to review the reasons for the desire to establish branch plants. One is management bugaboos. The top management may be afraid of strikes, fire or war. It may therefore decide to establish a branch plant regardless of the basic economics involved simply as partial insurance, so that should disaster occur production will continue, at least on a limited basis. It is my tendency to discount all such bugaboos completely.

Some industries, like the cannery division of the food industry, cannot operate without branch plants because of scattered agricultural areas where specific crops are grown. It is worthy of note, however, that gigantic industries which can economically operate several branch plants still do the major portion of their business in the principal location. Procter & Gamble is a good example. Although decentralization is continuing in a few major industries, it is still on a very limited basis, and it is worthy of note that with few exceptions the industries producing packaged consumer goods still operate from centralized locations.

The concentration of volume in a single area may be so great that the management may feel that a branch plant located in such an area can give better service to its customers than is obtainable from any warehousing service. If this is really the case no one can quarrel with facts. This was the case in connection with the operations of a west coast manufacturer, a third of whose volume was distributed in a few Eastern states. In this case the branch plant is paying for itself out of freight savings alone. The move was made even more practical by the fact that the volume transferred to the branch plant was more than compensated for by increased volume in the home plant. And the move was further subsidized by a substantial material saving which was made possible by the location of the branch plant.

The question of setting up a branch plant merely to save freight I have discussed in detail before. And I will touch on it again only to emphasize that the branch plant freight saving must be large enough, not only to carry the overhead cost of operating the branch plant, but also to compensate for the unabsorbed burden of the main plant occasioned by the transfer to the branch plant of a substantial portion of the volume of the main plant. Occasionally, however, the volume of the main plant becomes so great that no further increase is possible excepting by additional construction, in which case the branch plant has a better chance of justifying itself. Sometimes a situation arises where additional land for new construction is not available at the main plant, and non-contiguous facilities in the same city may be found to be almost as expensive to operate as a branch plant.

This brings up the question of expansion generally. The management may feel that even though there is sufficient land for additional construction at the home plant, the future growth of the business projected over a ten or twenty year period may be such as to justify

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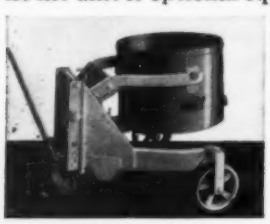

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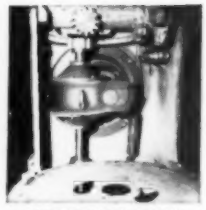

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the immediate establishment of a branch plant, even though for a period of years, the operation of the branch plant may cause an actual increase in operating costs. It must be remembered that this increase in cost tends to go downward as the volume of the branch plant and of the home plant increases. In the certainty that such increases will take place, the management may be perfectly content to carry for a few years the unabsorbed burden caused by the transfer of a portion of the volume from the main plant to the branch plant. The time may come when increasing volume will restore to the main plant the output that it had before the branch plant was established, thus eliminating the unabsorbed burden factor. At the same time the increased volume of the branch plant may reach a point where its savings in freight alone will offset its entire operating overhead.

Circumstances are never the same. The appraisal of each problem must be based upon facts and free from preconceived ideas, prejudices or unrealistic appraisal of future potential growth.

In evaluating the economics of a branch plant operation the following expenses should be included in arriving at the extra cost of operating the branch plant. Factory labor is not included because presumably the labor required at the branch plant will be offset by labor savings at the main plant.

Unabsorbed factory overhead expense of the main plant.

(Occasioned by transfer of a proportion of the volume of the main plant to the branch plant.)

Building and equipment depreciation.

Taxes on land and buildings, possibly also on equipment and inventory.

Insurance on excess inventories.

Insurance on plant and equipment.

Power, light, heat, water and gas.

Interplant shipments.

Interplant telephone and telegraph, including local service.

Interplant traveling expenses.

Miscellaneous, maintenance, and building supplies.

Automobile, depreciation and maintenance.

Salaries of plant manager and assistant.

Salary of control chemist.

Wages of maintenance engineer and one or more mechanics.

Wages of porters and watchman.

Food service.

Clerical wages.

Shipping and warehouse wages.

Research

A lot of money has been wasted and is being wasted in research by both drug and cosmetic firms. Much of this waste is caused by improper research organization. It is possible to make this blunt statement because there are in the pharmaceutical industry, particularly, many examples of well-organized and well-conducted research divisions and research programs. This is particularly true among the larger firms whose research experience extends all the way back from twenty to fifty years.

Part of the waste to which I have referred is caused by attempts at long-term or fundamental research by firms that are too small to stand the financial drain. The larger firms have been established long enough and have had enough experience so that they can budget research over a long period of time without worrying about temporary ups and downs in the sales cycle. Research, particularly long-term research, should not be hitched like a kite's tail to the marketing program. In setting up a long-term research program the research director should know for a certainty that he can depend upon a basic minimum budget. Among the smaller firms there is a tendency to appropriate a lot of money for research when profits are good and optimism is high, and then the very moment sales hit the toboggan, research expenditures are promptly curtailed. If anything worth while is to be accomplished research cannot be conducted in this way.

The smaller firms will get far more out of research by pooling their funds with other similar organizations and using consulting laboratories or conducting cooperative programs. Even among very large firms that can afford to spend millions annually on research there are cooperative research projects. The idea of cooperative research projects is by no means new among the larger drug firms and the tendency is increasing.

I know many cases where smaller firms became involved in research programs without a thorough preliminary market study, with the result that when the programs were completed, the market did not justify the money expended in research; the company was too small to exploit the market thoroughly; the company was too small to withstand the competitive pressure of the market it had entered; or the plant equipment necessary was far beyond the means of the particular company. Sometimes research projects are undertaken without a thorough (and expensive) patent research, with the result that the company finds itself in expensive patent interferences or actual patent litigation. More often research projects are undertaken without a painstaking survey of the literature. In consequence a lot of money is wasted in duplicated work.

You can call research the foundation or the keystone of both the drug and the cosmetic industries and the effort involved in it should not be wasted or rendered abortive. It is a difficult question for management to decide. If the small laboratories steer clear of fundamental research altogether there is a danger of stifling the brilliant contributions that have been made by brilliant men working in small laboratories. Teamwork and cooperative effort can accomplish a lot, but there is danger also in too much conformity in teamwork effort. The very brilliant man often is a lone worker. Research is an expensive gamble and it is becoming

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more so. How to handle it and how to subsidize it is one of the weightiest problems management has to deal with.

Good Builders

I should like to say a word of well deserved praise for J. Emil Anderson & Son, Incorporated, Engineers and Builders, of 1809 Balmoral Avenue, Chicago 40, Illinois. This firm has just completed a plant for one of my clients which I had a hand in designing. It was my experience with this firm that they did an excellent job at the lowest possible price. The overhead charges of this organization are the lowest I have ever encountered. One reason for this is that all of the officers of this firm are diligent workers and not merely high-salaried figureheads. It is my consistent experience with this firm that, whenever they had a choice of doing a job in strict accord with the specifications or doing it a better way, they did it the better way, even though in the majority of cases doing it the better way often cut in on their profits. This firm is small enough so that all the officers take a personal interest in every job, and yet big enough so that they can and do operate anywhere in the United States. This is the first time I have ever worked with this firm but it won't be the last if I have anything to say about it. This also is the first time I have ever gone to this extent to praise a construction firm, but the excellence of the job they did for my client justifies me in bringing this excellent outfit to your attention.

Apologia

Whenever I make a blunder it's a beaut, as Mayor LaGuardia used to say. Recently I gave a talk before the Research and Development Section of the ADMA. To double a metaphor I got off on the wrong foot and then put the foot in my mouth. The speech was wrong in content, tone, attitude and delivery and I apologize to my friends, the chemists, for such a bum performance. It's a wonder they didn't start throwing things.

Construction Costs

It is amazing how construction costs have increased over the last few decades. Recently I had an architect design a small hunting lodge for me and you'd have thought by the size of the estimates he submitted, that I was trying to build another Taj Mahal. Why I remember when Uncle Dave Whitlock built himself a big house back in 1910. A regular mansion it was. When folks found out he was going to spend fifteen hundred dollars just to build himself a house, they thought he'd gone crazy. But Uncle Dave went right ahead. He was fixing to get married someday and he wanted his bride to have the best a man could provide for her. (He never did get married incidentally.) But he built himself a humdinger of a house. A showplace it was and folks came from as far as ten miles away just to see it. It was a big house, about ten rooms as I remember, with a big porch clear across the front and around one side of it. There was a bay-window on the side and there were a couple of big, brass coal-oil lamps on the porch that the wind couldn't blow out.

There was a real sink in the kitchen that had a pump on to it and all you had to do was give the handle a couple of yanks up and down to get all the water you wanted. He even had a tank for hot water rigged up right next to the kitchen stove and in the winter, when the wood-stove was going all the time, you could get hot water just by turning a tap in the sink. You didn't have to dip any hot water out of the tank in the back of the stove except in summer. In a closet behind the stove Uncle Dave put in a real bath tub made out of wood and copper that shone like gold. All you had to do in winter to get a nice warm bath was open up the doors and fill the tub with water from the tank, and when you were through, all you had to do to get rid of the water was pull a plug and the water ran out doors through a pipe in the foundation of the house. Uncle Dave didn't use the tub much. He was drying himself one day back of the stove, and, when he bent over to dry his legs, he burnt his backside.

Just a little ways back of the house Uncle Dave built a three holer that was a Jim Dandy. It wasn't like other outhouses. It was a lot nicer than the new one down back of the school-house. It had siding on the outside and sheathing inside so it would be warm in winter. There was the main seat with three big holes that had covers on them and brass hinges too. You could look down through those openings and there were no knot-holes down below through which the cold wind could blow in winter. And the seat was nice and smooth and wouldn't frost up in winter—that is, not too much anyway, except when the weather got down below zero. Then at a right angle to the main seat, there was a cute little one with two holes for small children. Uncle Dave had everything figured out. Too bad he never got married. But he built a swell house even if he did spend a fortune on it. It had all the modern conveniences.

The following information is supplied by manufacturers of the equipment described and claims made below by these manufacturers are passed along for what they are worth. Presentation of such notice in this department is not to be taken as endorsement of the claims or of the equipment.

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This versatile LIGHTNIN Laboratory mixer has a motor approved by Underwriters' Laboratories for Class I, Group D, and Class II, Groups E, F, and G service. It is the only electric laboratory mixer designed for these service classes.

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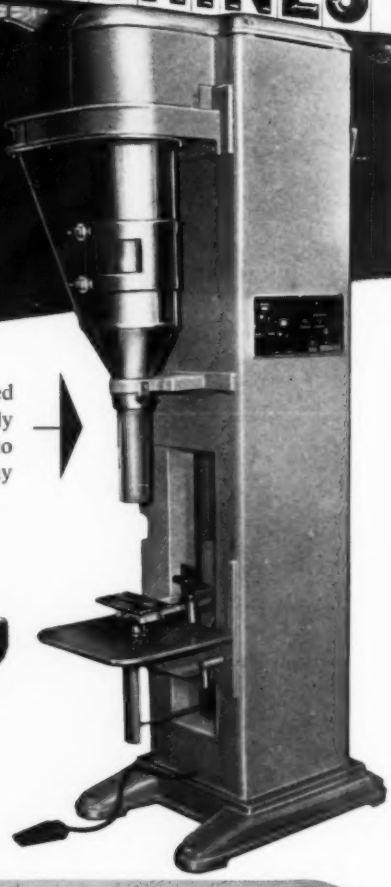

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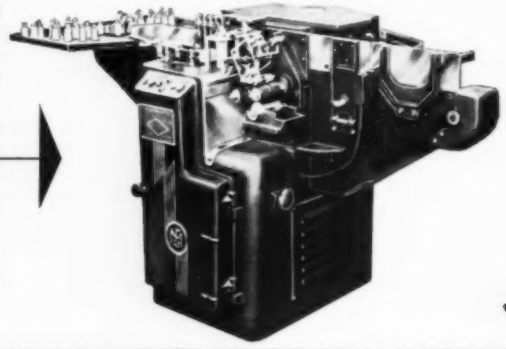

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nection with mass transfer and heat transfer studies. It can furnish accurate data for determining scale-up relationships.

The unit rapidly mixes low-viscosity fluids in quantities up to 50 gallons, and will mix lesser volumes of high-viscosity fluids.

The mixer clamps on the rim of any vessel, or may be clamped to a separate support. It adjusts easily to any desired angle, by means of a universal ball joint with screw-type locking clamp. Total weight is only 22 lbs.

The 1/20 HP totally-enclosed motor turns the shaft at a constant speed of 1750 RPM. The motor operates on 110-volt 60-cycle, single phase AC. Motor shaft is suspended on sealed ball bearings. To insure smooth operation, a third sealed ball bearing supports the tube holding the mixer shaft.

For easy replacement or change of shafts, a chuck connects the shaft to the drive tube. Tube, chuck, shaft and propellers are Type 304 stainless steel. A wide choice of interchangeable shafts and propellers in other metals and alloys are available.

Specify LIGHTNIN Model XP, manufactured by Mixing Equipment Co., Inc., 135 Mt. Read Blvd., Rochester 11, New York.

Swiss Machines

Of special interest to the packaged products industry is the news that the famous Swiss SIG line of automatic wrapping machines is now available through an American sales organization.

As part of its long established program of heavy exportation, the Swiss Industrial Company has completed arrangements for representation in this country. Named as exclusive sales and service distributor in the United States for the SIG line is Stokes and Smith of Philadelphia, one of America's foremost manufacturers of packaging equipment. Heretofore, sales of SIG machines to American users have been handled directly by the manufacturer in Switzerland.

The SIG line, well known in its field for quality construction, is comprised of three classes of machines. General operations embraced by these types are candy and bar wrapping and cartoning, molding and wrapping, and packaging of loose products. Typical products handled by this equipment include chocolate tablets and bars, bouillon cubes, wafers, soap products, butter and margarine, detergents and ground or bean coffee. There is also a wide range of special designs for a variety of other products.

Among the better known SIG machines is the Type CK—a high speed, adjustable model for 1/3 oz. to 3 oz. chocolate bars and tablets. This machine has a maximum output of 160 packages per minute, although it can be run at virtually any lower speed. In operation, the product is fed by a washable stainless steel chain into the machine where it receives the inner foil or paper wrap which is envelope-folded into the outer cover all in one operation. The finished packages emerge in a horizontally stacked row to facilitate packing. The whole procedure is completely automatic and requires but two attendants.

The acquisition of these machines by Stokes and Smith comprises a valuable addition to an already extensive line of packaging equipment. For full details of SIG Wrapping Machines contact STOKES AND SMITH COMPANY, subsidiary of Food Machinery and Chemical Corporation, Philadelphia 24, Pa.

The SIG Machines are produced at the Swiss Industrial Company plant at Neuhausen Rhine Falls, Switzerland. The company's total factory site is over thirty acres, with over 755,000 square feet of actual floor space.

Yardloader Forktruck

The Baker-Raulang Company has developed a new, low-cost, gasoline engine, 4000-pound fork truck designed for outside or rough-surface work. It has a travel speed of 14 miles per hour.

Called the Yardloader, Baker's new truck is priced at $2,985—about 25 per cent less than other gas-powered fork trucks of the same capacity.

Its high-travel speed, according to the announcement, makes it particularly valuable for yard-handling jobs requiring the movement of materials over large areas. Large pneumatic tires and an exceptionally high-ground clearance are additional Yardloader features which suit the new truck for yard-handling operations. Also, the Yardloader uses an extra-heavy drive axle and an oscillating-trail axle to permit its operation over unimproved or semi-improved surfaces.

Powered by a valve-in-head Case industrial engine, Baker-Raulang's Yardloader has a standard lifting height of 122 inches.

Other important Yardloader specifications, excluding forks, are listed below:

Overall length: 100½ inches
Overall width: 50 inches
Wheelbase: 55 inches
Ground clearance: 5 inches
Turning clearance: 92 inches
Shipping weight: 7000 pounds

(Continued on page 854)

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Readers' Questions

Spirit Gum: *I am interested in the formulation of a "Spirit of Gum" used as an adhesive for artificial moustaches, false sideburns, wigs, and such. Flushing.*

An old fashioned preparation of this sort calls for the use of: One-half ounce each of resin, tolu balsam, benzoin, sandarac, mixed with three ounces of alcohol.

A British text also offers the following formula for a spirit gum:

Resin	**1.0 parts**
Castor oil	**0.5 "**
Alcohol to make	**4.0 "**

Denture Cleaner: *We are interested in the manufacture of a denture cleanser, and shall be glad if you will let us have a formula, in this connection. London.*

The following preparation is recommended by the American Dental Association:

Trisodium phosphate	**120.00 Gm.**
Cinnamon oil	**0.30 cc.**
Amaranth solution	**2.00 cc.**

Dissolve scant ¼ teaspoonful in half glass of water and use with brush. The A.D.A. points out that cellulose acetate type denture is decomposed by alkaline substances. Phenol formaldehyde and acrylic types withstand most chemical agents.

Flea Powder: *We are interested in obtaining a formula for a flea powder for dogs. Any information you can furnish will be greatly appreciated. Hallandale.*

The pharmaceutical Recipe Book gives two illustrative formulas for flea powders. The first consists of:

Boric acid, in powder	**142.0 Gm.**
Sublimed sulfur, in powder	**142.0 Gm.**
Naphthalene, in powder	**142.0 Gm.**
Oil of pennyroyal	**10.0 cc.**
Pyrethrum flowers, in powder,	**564.0 Gm.**
to make	**1000.0 Gm.**

Mix the dry ingredients by trituration, then add the oil, triturate again, and finally pass the mixture through a No. 20 sieve.

The second one contains:

Derris root, in powder	**20.0 Gm.**
Pyrethrum flowers, in powder	**20.0 Gm.**
Kieselguhr	**60.0 Gm.**
To make	**100.0 Gm.**

Hand Lotion: *I would appreciate your assistance on a hand lotion. I formerly used a mixture containing stearic acid and cocoa butter, but I have forgotten the formula. Culver City.*

I think that the following formula will meet your requirements and make a very nice product:

Stearic acid	**10.0 parts**
Cocoa butter	**2.0 "**
Lanolin, anhydrous	**2.0 "**

Melt and emulsify with the following solution, brought to the same temperature:

Triethanolamine	**4.0 parts**
Glycerine	**16.0 "**
Water, to make	**100.0 "**

Topical Analgesic: *Could you suggest a good formula for a topical liquid analgesic? Cincinnati.*

Since you do not tell me the purpose for which this product is intended, I can only give you general information. For example, a topical anesthetic such as is used by dentists, consists of:

Ethyl aminobenzoate	**10.00 Gm.**
Alcohol	**74.00 cc.**
Oil of cinnamon	**0.25 cc.**
Solution of amaranth	**0.25 cc.**
Distilled water, to make	**100.00 cc.**

Dissolve the ethyl aminobenzoate in the alcohol; add the oil of cinnamon, solution of amaranth and sufficient distilled water to make the product measure 100 cc.

Another type for use on the skin, as given by Goodman, is as follows:

Chloral hydrate	**4.0 parts**
Spirit of camphor, to make	**100.0 "**

Dissolve the chloral hydrate in the spirit of camphor.

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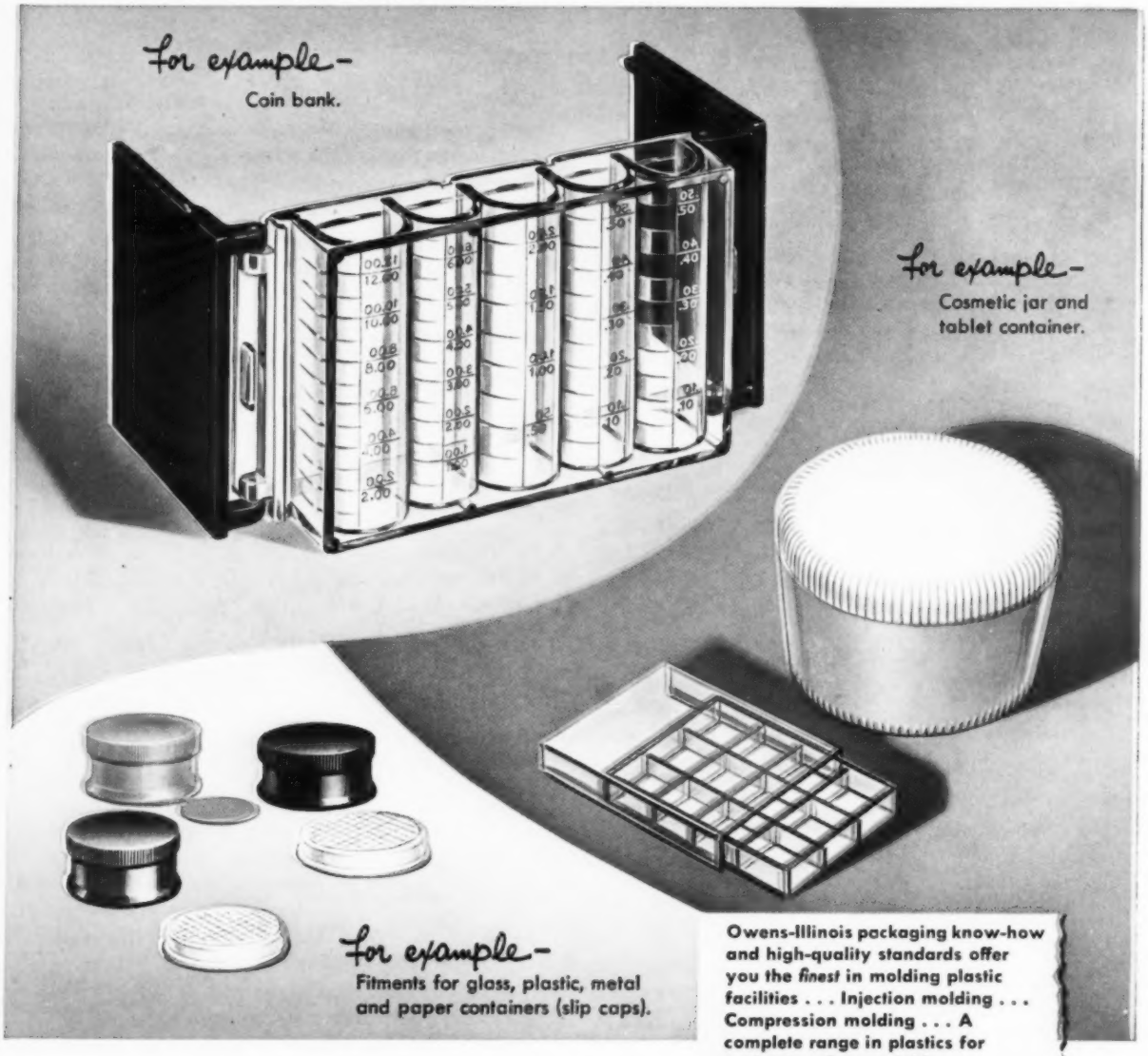

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Advancing Therapy

Nutritional Processes

On the basis of extensive studies, T. D. Spies (*J.A.M.A.* 153:193, 1953) has stressed that the lack of proper growth and development of infants and children is a chemical and clinical problem and that the process of aging and illness should be approached as a chemical, as well as a clinical, problem. Deficiency diseases in human beings tend to develop slowly, and what many physicians fail to realize is that they are corrected slowly. All too frequently the patient and the physician become impatient because they do not realize the time necessary to restore physiological function that was damaged by a slow and long-drawn-out process. Frequently there is a point beyond which there is some irreversible change.

As an outgrowth of 25 years' work, says Spies, the following four essentials for therapy in nutritive failure have been devised: (1) diet—adequate calories, adequate protein, vitamins, and minerals in suitable and edible form for the individual person; (2) basic supplement—vitamin A, thiamine, riboflavin, nicotinamide, ascorbic acid, folic acid, vitamin B_{12}, and "activator" when necessary; (3) additional medication—as indicated for coexisting diseases; (4) natural B complex—dried brewers' yeast powder or liver extract.

The basic formula for the treatment of clinical syndromes of mixed vitamin deficiences is as follows:

	Daily
Folic acid	**5 mg.**
Thiamine	**10 mg.**
Nicotinamide	**150 mg.**
Riboflavin	**10 mg.**
Ascorbic acid	**150 mg.**
Vitamin B_{12}	**10 to 15 mcg.**

It is pointed out that pregnancy, lactation, growth, and aging result in special stresses on nutritional processes of the body. It is well known that improper diet is not the sole cause of dietary-deficiency diseases but that impaired absorption from the alimentary tract, failure of utilization by the tissues, and inadequate storage may be contributing factors. Patients must have an adequate intake of the needed nutrients, which must be properly assimilated and utilized. Therefore, the physician should prescribe, in addition to specific therapeutic agents, a diet that the patient can eat and digest satisfactorily. Sole reliance on dietary therapy, however, is inadvisable and impractical. It is better to prescribe too much of the therapeutic agents indicated rather than too little, too soon rather than too late.

Drugs for Hypertension

In reporting on the use of hydralazine (Apresoline) and hexamethonium (Bistrium) in the treatment of hypertension, R. R. J. Hilker, P. S. Rhoades and C. E. Billings (*J.A.M.A.* 153:5, 1953) have stressed the evaluation of side effects, best method of administration, and clinical response. Thus they found that hydralazine hydrochloride is a safe, moderately effective, antihypertensive drug. It can be given to office patients. The incidence of toxic effects is high, but these are generally transient. Of patients able to tolerate the drug, 66 per cent obtained a significant fall in systolic pressure and 44 per cent a significant fall in diastolic pressure. Thirty per cent did not respond to therapy. Patients in whom the pressure was significantly lowered were relieved of hypertensive symptoms.

Hexamethonium is a powerful, dangerous, antihypertensive drug. Its oral use results in unpredictable, wide variations in blood pressure. Starting oral therapy on office patients is not completely safe. Its main effect is brought about through postural hypotension. While standing, 93 per cent of patients had a significant fall in systolic pressure and 47 per cent in diastolic pressure. Patients in whom the pressure was significantly lowered were relieved of hypertensive symptoms. The use of hexamethonium should be restricted to patients with severe hypertension that does not respond to other measures.

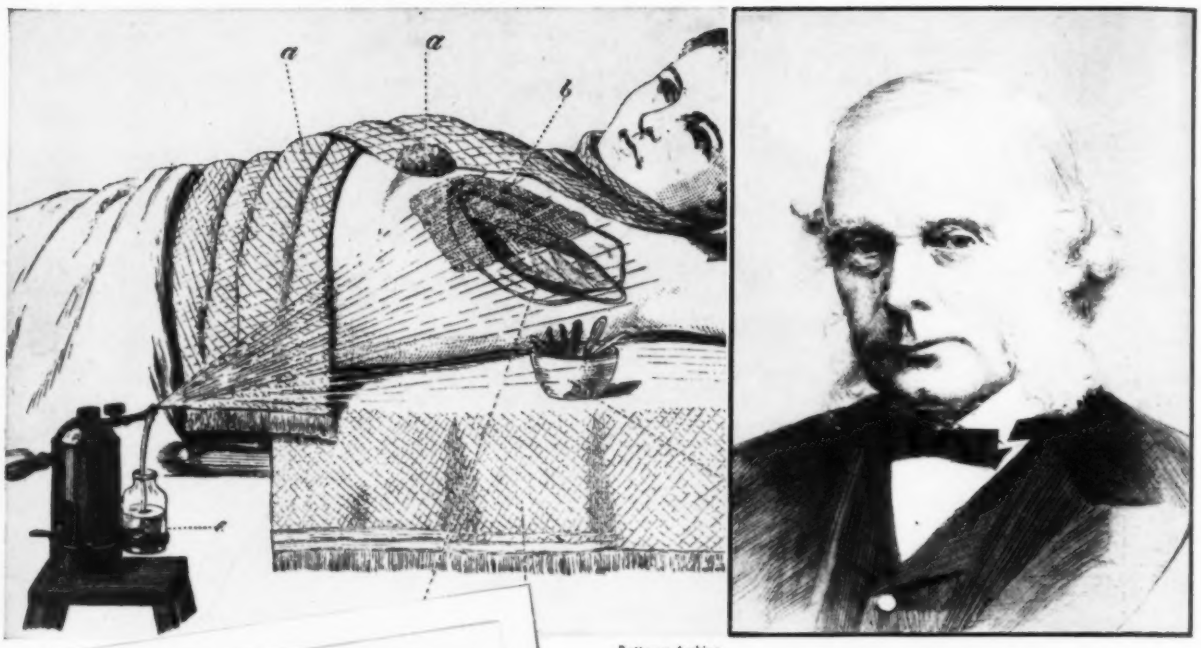
Combined use of these drugs results in only slight advantage. The major therapeutic result in combined therapy is from hexamethonium. Elderly and severely arteriosclerotic patients do not tolerate a lowered blood pressure well. These drugs should be used with caution in such patients.

Hilker and his colleagues point out that these drugs are not a completely satisfactory treatment for hypertension. They are, however, the best now available. Perhaps their greatest value will be the stimulation of investigation in similar and in new drugs.

PVP in Burn Shock

The hydrophylic nature and osmotic activity of polyvinylpyrrolidone (PVP), say J. W. V. Cordice, Jr., J. E. Suess and J. Scudder (*Surg., Gynec. & Obstet.* 96: 39, 1953) are factors that increase and maintain circulating blood volume. The ability of the polyvinylpyrrolidone molecule to bind or adsorb toxins and the fact that it is inexpensive, completely sterilizable, producible in unlimited quantities, nonantigenic, and well tolerated assure polyvinylpyrrolidone an important role in burn therapy.

Cordice and associates review their experience with polyvinylpyrrolidone in Ringer's solution in the treatment of eight severely burned patients. The areas involved by the burns varied from 20 to 75 per cent of the body surface. From 1,000 to 3,000 cc. of polyvinylpyrrolidone in Ringer's solution was infused in from one to eight and one-half hours. All patients treated with the polyvinylpyrrolidone solution on admission showed recovery from shock, decrease in hematocrit, improvement of toxicity, and increases in urinary output. In three cases the hemoglobinuria cleared in periods of 12, 15, and 48 hours respectively, but the improvement and the fall in hematocrit were not maintained as well as in hemorrhagic and traumatic shock. This may be explained by the continued fluid and protein loss from the burned areas. Early improvement with fall in hematocrit was always observed, and in none of the four patients who died was death caused by shock or hemoconcentration. Three of the fatal cases showed laboratory evi-



Bettman Archive

JOSEPH LISTER (1827-1912), English surgeon noted for his founding of antiseptic surgery. Illustration shows patient being subjected to carbolic spray treatment to keep his wound purified. Towels also were soaked in a carbolic solution.

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dence of impairment of liver function. There was no evidence of toxic action of polyvinylpyrrolidone.

In the opinion of Cordice and his colleagues, their results substantiate previously published experiences and indicate that polyvinylpyrrolidone is a valuable adjunct in the early treatment of burns.

Chartreusin, New Antibiotic

B. E. Leach, K. M. Calhoun, L. E. Johnson, C. M. Teeters and W. G. Jackson (*J. Am. Chem. Soc.* 75:4011, 1953) report that a new antibiotic has been obtained from culture filtrates and also from the mycelial mat of two hitherto undescribed *Streptomyces* sp. isolated from the soil. *Streptomyces chartreusis* was isolated from an African soil while another *Streptomyces* sp. which produces this antibiotic was obtained from a Michigan soil. The generic name, chartreusin, has been assigned to this antibiotic because of the characteristic color of the crystalline material.

Chartreusin has been crystallized from concentrates of the culture filtrates as greenish-yellow crystals. The sodium salt also has been crystallized. Elemental analyses and molecular weight determination indicate an empirical formula of $C_{15}H_{14}O_6.2H_2O$. At room temperature, the antibiotic is stable for several hours over the range of *p*H 2 to *p*H 10. However, prolonged heating at *p*H 2 or 10 destroys the antibiotic activity. Chartreusin is active against certain Gram-positive organisms and mycobacteria. It also is active against the *Micrococcus pyogenes* v. *aureus* phage. The acute LD_0 subcutaneously in mice for chartreusin is 2500 mg. per kg.; however, the sodium salt has an acute LD_{50} intravenously in mice of 250 mg. per kg. In chronic studies the antibiotic seems to have a cumulative toxicity, particularly when the sodium salt is used.

Influenza Virus Vaccine for Herpes Zoster

In a series of 100 cases of herpes zoster treated by C. M. Griswold and S. S. Bowen (*Texas State J. Med.* 49: 693, 1953), the patients received one or more 0.5 cc. injections of type A and B influenza virus vaccine. The average number of days after treatment was first given before resolution of the vesicles occurred was 5.56; there was an incidence of five per cent postherpetic pain of one month or longer. The number of days between treatment and resolution of the lesions corresponded satisfactorily with other approved methods of treatment. The number of days between treatment and resolution in control patients in the series was in accord with another study of patients treated with only an analgesic in which ten days intervened on the average.

In the opinion of Griswold and Bowen there was no question but that the outlook for satisfactory results was materially enhanced by the early administration of the vaccine. Patients who had the dermatologic lesions for a week or longer and had neuralgic pain showed considerably less response to therapy than patients with disease of shorter duration, as well as a greater probability of postherpetic neuralgia. It is felt that influenza virus vaccine undoubtedly is of value in the treatment of herpes zoster by inhibiting the appearance of new lesions, drying up old lesions, lessening pain in early cases, and contributing to a low incidence of postherpetic complications, although it appears to be of no effect on postherpetic pain. Moreover, the ease of administration, lack of side reactions, and low cost of the treatment make it satisfactory for the ambulatory office patient.

Herpes simplex also responds promptly to injections of influenza virus vaccine. Approximately 150 patients with herpes simplex who received similar injections of influenza virus vaccine showed 67 per cent response to one injection of the vaccine.

Experiences with Erythromycin

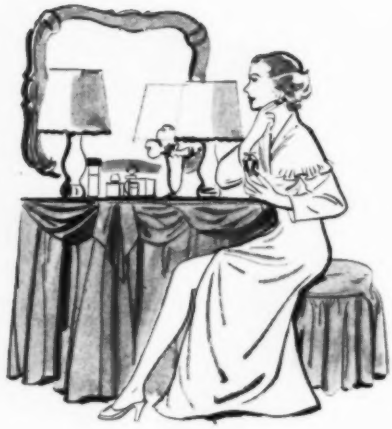
Some laboratory and clinical experiences with erythromycin have been reported by M. E. Grigsby, J. B. Johnson and G. W. Simmons (*Antibiotics & Chemother.* 3:1029, 1953). They found that erythromycin given orally is an effective antibiotic and seems to be the antibiotic of choice at present in the treatment of infections due to resistant strains of staphylococci. It is also effective in the treatment of pneumococcal and streptococcal infections. Three out of four cases of acute gonococcal infections in females responded very well. Adequate plasma levels were maintained for eight hours after a single dose of 500 mg. of erythromycin by mouth. Erythromycin appeared in ascitic fluid in amounts that were about 0.3 that of the plasma level. Adequate concentrations were attained in the pleural fluid and urine. Erythromycin is irregular in its appearance in the spinal fluid; in one case with inflamed meninges, it appeared in quantities inadequate to achieve clearing of the infection. Adequate blood levels were attained with parenteral erythromycin.

Because of the favorable clinical and bacteriologic results attained in the majority of the 38 cases in this series, it appears that erythromycin deserves further clinical trial in the treatment of infections due to gram-positive organisms. Erythromycin might also be used in those patients showing penicillin sensitivity or having an allergic background.

Cortisone and ACTH in Rheumatoid Arthritis

The report of W. S. Clark, H. O. Tonning, J. P. Kulka and W. Bauer (*New England J. Med.* 249:635, 1953) describes observations on the use of cortisone and ACTH in 52 patients with rheumatoid arthritis and impressions gained to date concerning their possible place in the therapeutic armamentarium against this disease. They found that these agents can favorably alter the clinical and laboratory manifestations of rheumatoid arthritis. The most immediate and impressive response is a decrease in symptoms, particularly pain and stiffness, and in consequence an improved functional status. Objective improvement is generally less than subjective improvement and is never complete. Some histologic evidence of joint inflammation persists even after long-term therapy in doses sufficient to produce hypercorticism. Progression of the disease can occur under adequate hormone therapy as evidenced by x-ray examination. All patients do not respond favorably to these agents, their efficacy depending to a large degree on the type of patient selected for treatment.

Clark and colleagues believe that hormone therapy should not be employed until maximum benefit from conservative measures has been established, and should always be combined with such measures. The total improvement that accrues is frequently a direct result of rehabilitation procedures facilitated by cortisone or ACTH or both. There is as yet no evidence that either agent alters the remission rate or the natural course of rheumatoid arthritis. The hazards of hormone therapy include not only those directly associated with hypercorticism but also psychologic reactions that lead to a failure to adhere to conservative measures of proved value in the treatment of arthritis.



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Compounder's Corner

Status of Paraphenylenediamine Hair Dyes

In a report on the present status of paraphenylenediamine or P.P.D. in dermatology, L. Schwartz (*South. Med. J.* 46:769, 1953) observes that the most frequent reports in medical annals of dermatitis from P.P.D. have been from its use as a human hair dye. The most serious cases occurred from its use as an eyelash dye. Conjunctivitia, keratitis and pan-ophthalmitis have been reported from eyelash dye. As a result its use as an ingredient in eyelash dyes is now forbidden by law.

The use of P.P.D. as a hair dye has increased despite the cases of dermatitis reported from it in the early days of its use. This is because the P.P.D. hair dyes are fast, resisting the action of hot and cold shampoos. When properly applied they dye the epidermis of the hair evenly, down to the medulla, and the particles of dye are not discerned on the hair. There are now many P.P.D. hair dyes on the market both for use in beauty shops and for use at home. Ninety-five per cent of all hair dyes contain P.P.D. (exclusive of so-called hair rinses). One brand sold more than eight million packages in one year, yet since 1937 the cases of dermatitis reported from them have been few. According to the statistics of a large insurance carrier, the incidence of dermatitis from P.P.D. hair dyes was one in ten thousand 20 years ago, but now it is the range of one case to every 40 to 60 thousand packages used.

Schwartz explains that in actual dyeing of the hair one package containing two solutions is used, each in a separate bottle. One bottle contains the solution of P.P.D. and ammonia in concentrations depending on the color to be imparted, and the other bottle contains the oxidizing agent, usually peroxide of hydrogen in sufficient amount and concentration to oxidize the P.P.D. contained in the first bottle. The contents of the two bottles are poured into a vessel, stirred and allowed to stand a few minutes before being applied to the hair. The ammonia makes the solution alkaline and softens and swells the hair and permits better action of the dye. The longer the mixture stands before being applied to the hair the more oxidized the P.P.D. becomes and the more the ammonia is evaporated, hence the less likely is dermatitis to occur. After the dye mixture is applied, a matter of an hour or less, the hair is shampooed and all remaining dye mixture is washed away.

It is not uncommon to find individuals who complain of a burning and stinging of the scalp when the dye mixture is applied. This is caused by the ammonia and not the P.P.D. Occasionally there is a complaint of small isolated sores on the scalp after the hair is dyed. These sores are caused by the ammonia irritating previously present excoriations caused by seborrhea, scratching or strenuous combing and brushing. Such sores usually heal in a week and do not recur with repeated use of the dye. The cases of dermatitis due to P.P.D. sensitization are characterized by a general swelling of the scalp, forehead, ears, tissues around the eyes and face. Vesicles may soon develop which break and ooze. The picture is one of an acute eczematoid dermatitis.

In concluding, Schwartz points out that manufacturers of hair dyes usually have consultant dermatologists who test the possible irritant properties of new formulations by the prophetic patch test and by extensive trial usage before the dyes are marketed. This practice together with the facts that pure P.P.D. is now obtained, that the hair dyes are carefully prepared, packaged, labeled and accompanied with detailed instructions for use, and the legal requirement of pre-dyeing open patch tests, accounts for the diminished incidence of hair dye dermatitis despite the increased use of the oxidizing hair dyes.

Lotion for Oily Hair

In response to an inquiry on the proper treatment of very oily hair in white women, it is noted in the *Journal of the American Medical Association* (153:607, 1953) that the condition may be controlled and maintained under control but not cured. The treatment consists of the daily application to the scalp of drying agents. A popular preparation for this purpose consists of:

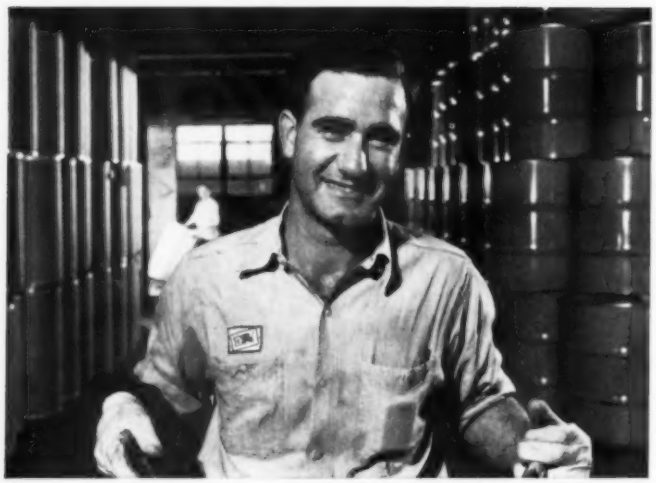
Salicylic acid	**2.0 Gm.**
Coal tar solution (liquor carbonis detergens)	**8.0 cc.**
Camphor water	**45.0 cc.**
Ethyl alcohol (up to 95 per cent)	**180.0 cc.**

Synthetic Edible Cream

According to a note in the *British Medical Journal* (2:55, 1953), synthetic edible creams are essentially stabilized artificial emulsions of fat. A typical specimen might be expected to contain about 40 per cent of a bland edible oil kept in the form of an aqueous emulsion by means of stabilizers such as methyl-ethyl-cellulose and glyceryl monostearate. Sugar is usually added, and also salt and various flavoring and coloring agents. Synthetic creams should share with natural cream the advantage of supplying fat in readily digestible form. Possibly they may be preferred to the natural product for better keeping qualities and presumably for bacterial sterility. Fresh cream, on the other hand, is not to be neglected as a source of vitamins A and D.

Potassium PABA Tablets

It is pointed out by G. L. Phillips (*Bull. Am. Soc. Hospital Pharm.* 10:152, 1953) that the treatment of lupus erythematosus, scleroderma, and dermatitis herpetiformis often require large doses of potassium *para*-aminobenzoate which prove irritating to the gastric mucosa in many patients if taken in solution form or as ordinary compressed tablets. The addition of methyl cellulose (4000 cps.) powder to the granulation delays disintegration and solution of the potassium *para*-aminobenzoate. Clinical trial suggests that these "delayed action" tablets may be tolerated by many patients who have had difficulty with a 10 per cent solution of potassium *para*-aminobenzoate or other ordinary



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tablets. The formula for 1000 tablets is as follows:

Potassium *para*-aminobenzoate	**500.0 Gm.**
Methyl cellulose powder (4000 cps.)	**100.0 Gm.**
Magnesium stearate	**10.0 Gm.**
Talc	**10.0 Gm.**
Spearmint oil	**1.5 cc.**

Mix thoroughly and compress directly by slugging. Use a 7/16 inch concave die.

Make-Up Products

In the opinion of H. C. Janowitz (*Soap, Perf. & Cosmetics* 26:911, 1953) the word "make-up" is applicable to products which serve "to decorate, to beautify, to hide blemishes." In discussing such products he stresses the importance of proper pigment content and expresses a preference for titanium dioxide both for its chemical inertness in liquid suspensions and for covering power. This is indicated in the following basic formula for a liquid powder:

Titanium dioxide	**10 parts**
Talc	**5 "**
Precipitated chalk	**5 "**
Bentonite	**3 "**
Glycerine or sorbitol	**5 "**
Color, perfume and preservative	**sufficient**
Water, to make	**100 parts**

Other additions may be made according to individual taste. To prevent rubbing off, about one per cent of a non-irritant, water-soluble resin may be added, such as soluble shellac or sorbitol borate. For quicker drying, part of the water may be replaced by alcohol.

A liquid or semi-liquid make-up may also be made by incorporating pigments in certain types of oil-in-water emulsion, the pigment content being kept at 10 per cent titanium dioxide and five per cent talc, or slightly less, as in the following formula for a liquid make up:

Mineral oil, B.P.	**250 parts**
Stearic acid, triple-pressed	**35 "**
Cetyl alcohol	**5 "**
Lanolin	**20 "**
Triethanolamine	**15 "**
Water	**675 "**
Titanium dioxide	**100 "**
Talc	**50 "**

Here the emulsion portion is first made in the usual way, by melting together the fats and oils, at 70° C. and stirring in, also at 70° C., the triethanolamine dissolved in the water. The sifted and colored pigments are then worked in, the final product being optionally milled or homogenized.

A powder cream made up with a slightly superfatted vanishing cream base also contains a similar proportion of pigments, as is indicated in the following example:

Stearic acid, triple-pressed	**180 parts**
Mineral oil, B.P.	**50 "**
Cetyl alcohol	**10 "**
Lanolin	**20 "**
Triethanolamine	**15 "**
Sorbitol	**50 "**
Borax	**15 "**
Water	**660 "**
Titanium dioxide	**100 "**
Talc	**50 "**

From such a cream to cake make-up is just another step, as is shown in the combination cited below:

Diethylene glycol stearate	**25 parts**
Titanium dioxide	**20 "**
Kaolin	**10 "**
Talc	**25 "**
Sulfonated castor oil	**15 "**
Colors	**5 "**

In the opinion of Janowitz isopropyl myristate is one of the modern cosmetic materials that is especially suitable for use in the improved make-up preparations. It is a liquid fatty ester which is virtually non-greasy in action and does not deposit an unpleasantly oily film. Its use is illustrated in the following procedure for making cream make-up:

Beeswax	**15 parts**
Sesame or teaseed oil	**30 "**
Isopropyl myristate	**15 "**
Water	**24.5 "**
Borax	**0.5 "**
Titanium dioxide	**10 "**
Talc	**5 "**
Preservative, color and perfume	**sufficient**

A cold cream is made using only part of the sesame or teaseed oil. The balance of the oil is mixed with the sifted pigments. The second batch is then mixed with the first and subsequently put through a colloid mill.

Janowitz stresses that the chief point to remember, when making oil or water-in-oil cream mixtures with pigments is that the latter must be thoroughly wetted with the oil phase before incorporation. This is particularly the case with water - in - oil emulsions, which otherwise will separate.

He also presents the following formula for preparing make-up sticks:

Zinc oxide	**40 parts**
Talc	**10 "**
Lanolin, anhydrous	**12 "**
Isopropyl myristate	**22 "**
Microcrystalline wax	**8 "**
Carnauba wax	**8 "**

This may be varied by adjusting the high-melting waxes to give a final product of desired melting point, and also by varying the ratio of pigments, waxes, and oils and fats.

Cold Sterilizing Solutions for Instruments

In a consideration of cold sterilizing solutions appearing in the Practical Pharmacy Edition of the *Journal of the American Pharmaceutical Association* (14:470, 1953) it is stated that the following preparation has been rated as a most effective solution for this purpose:

Isopropyl alcohol	**500 cc.**
Methyl alcohol	**40 cc.**
Formaldehyde solution U.S.P.	**80 cc.**
Benzalkonium chloride, 12.8 per cent	**8 cc.**
Sodium nitrite	**10 Gm.**
Distilled water, to make	**1,000 cc.**

Add the benzalkonium chloride (Zephiran) solution and the formaldehyde solution (formalin) to 300 ml. of distilled water. Dissolve the sodium nitrite in this mixture. Add the two alcohols slowly with constant stirring. Then add distilled water to 1,000 ml.

Other cold sterilizing solutions are given. Thus an acetone-containing sterilizing solution includes:

Acetone	**250.0 parts**
Chloroform	**250.0 "**
Liquid Petrolatum	**25.0 "**
Cresol	**25.0 "**
Alcohol, 95 per cent	**500.0 "**
Gentian Violet Solution, one per cent	**3 drops**

A formaldehyde-type formula contains:

Formaldehyde Solution U.S.P.	**5.0 parts**
Alcohol	**70.0 "**
Distilled Water	**10.0 "**
Isopropyl Alcohol	**15.0 "**
Methenamine	**0.3 part**

Also included is the following formula for a solution in which to keep cleaned and sterilized instruments:

Isopropyl Alcohol	**93.0 parts**
Propylene Glycol	**5.0 "**
Compound Cresol Solution	**2.0 "**

Sonneborn Scrapbook - 1937

Sonneborn Develops First Test to Predetermine Stability of White Oils

New York, N. Y., 1937. L. Sonneborn Sons, Inc. has recently developed the first reproducible, accelerated method of determining the shelf life of white oils. Long needed in the industry, this test foretells how long white oils may be stored before changes in odor, taste and color can be expected.

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Industry's Books

Plant Diseases in Orchard, Nursery and Garden Crops, by Ernst Gram and Anna Weber, Edited and Adapted by R. W. G. Dennis, Ph.D., Royal Botanic Gardens, Kew, Translated from the Danish by Evelyn Remsden, 618 pp., 8 x 12, Illus., Philosophical Library, New York, (1953), $19.50.

Whereas previous English books on plant diseases have approached the subject from an academic standpoint and were addressed primarily to students, Gram and Weber's work was compiled by practising plant pathologists for the use of growers themselves. The first section of the book is devoted to those general principles which must be understood before an intelligent attempt can be made at disease control. A few common diseases which attack a large number of crops are then described in detail. The next three sections are devoted to an account of the diseases of individual crops. These are arranged alphabetically in three groups, Tree and Bush Fruit, Vegetables and Herbaceous Fruit, and Ornamental Plants and Trees. Then follows a valuable section on control measures. A special feature of the book is the keys for diagnosis of diseases by their symptoms and emphasis is laid throughout on prevention and control of disease or reduction of the losses it involves. The 350 illustrations have been chosen to facilitate recognition of the diseases rather than to feature microscopic characters of the fungi associated with them. They are suplemented by ten color plates. This is a practical book for practical people.

Modern Concepts of Communicable Disease, by Morris Greenberg, M.D., Director, Bureau of Preventable Diseases, New York City Department of Health, and Anna V. Matz, R.N., M.A., Public Health Nursing Consultant in Communicable Disease, New York City Department of Health, 553 pp., Illus., G. P. Putnam's Sons, New York, (1953), cloth $6.20.

This book is intended to serve many uses by all health workers. In Part I the authors present their philosophy of patient care as they apply it to communicable disease and outline a program integrating the contributions of doctor, nurse, health department, hospital, social worker, and members of the patient's family. Stress is placed upon the importance of understanding certain basic principles such as infection and resistance with applications to everyday pratice as well as principles underlying treatment with drugs, antibiotics, inhalators and physical agents. Part II is devoted to presenting the specific communicable diseases under proper classifications. In the discussion of each disease a pattern is followed which considers the agent, the host and the environment together with a description of the appropriate medical care. Nursing is presented as an integral part of the overall medical care thus placing the real emphasis upon nursing problems.

Foams: Theory and Industrial Applications, by J. J. Bikerman, in collaboration with J. M. Perri, (Director of Research National Foam Co.), R. B. Booth (Mineral Dressing Laboratory American Cyanamid Co.), and C. C. Currie (Manager, Fluids Section Product Engineering Laboratories Dow Corning Corp.), 347 pp., Book Div., Reinhold Publishing Corp., New York, (1953), Cloth $10.

This is a very complete treatise on the subject of foams. The book critically reviews the world literature on foam and offers a thoroughly up-to-date treatment of its physical chemistry and industrial uses. The first section of the book, comprising about three-fourths of the material, is devoted to the chemical and physical properties of foams. Here, such phenomena as foam formation and structure, foam drainage, and the mechanical, optical and electrical properties of foams are discussed in full detail. The remaining chapters describe many important applications of foams in such fields as fire protection and froth or ore flotation. There is also a valuable chapter on the chemical destruction of foams, which is so important in petroleum and lubrication technology. Bikerman's book, with its extensive bibliographies and wide range of useful working information, will prove of utmost value as a reference work in patent searches, and to all physical chemists, colloid chemists and technologists in the soap, petroleum, rubber, plastics, paint, beverage and other industries wherein the use or destruction of foam is of major importance.

Odors and the Sense of Smell, a Bibliography 320 BC-1947, 342 pp., 8½" x 11½", Airkem, Inc., New York, (1952), Cloth, $15.

In undertaking basic research on the subject of odor, Airkem, Inc., found it advisable to examine the reports of all other workers in the field. Since no sufficiently extensive compilation of such reports was in existence, Airkem, through its affiliate, the Florida Chemical Research Company, arranged for in existence, Airkem, through its affiliate, the Florida Chemical Research Company, arranged for an extensive program of library research. This library research has resulted in the compilation of this bibliography. Important reports dealing with the nature of odor substances, the mechanics of odor stimulus, the reaction of the odor brain and the psychophysical response of the living organism, were found scattered through so many types of publications that it was found necessary to exhaust the compiled indexes existing in the country's larger libraries. This task, taking over four years of detailed work, has been most fruitful and has produced one of the largest scientific bibliographies in existence. Compilation of additional references is continuing and if the demand warrants, supplements will be issued which will make the bibliography a tool of continuing usefulness.

Practical Chromalography, by R. C. Brimley, and F. C. Barrett, Low Temperature Research Station, Cambridge, 128 pp., Reinhold Publishing Corp., New York, (1953), Cloth, $5.

This is a concise, factual introduction to chromatography which includes all the latest methods, equipment and important applications. Written by two leading English chemists, this book covers the paper, adsorption, ion-

(Continued on page 835)

Perfumer's Shelf

Terpenes as By-Products

In an editorial comment in *The Perfumery and Essential Oil Record* (44:235, 1953) it is remarked that with the essential-oil industry, the word, by-product, is in many cases synonymous with the word, terpene. When the chemistry of the essential oils was in its infancy the word, terpene, was coined for the substances of a hydrocarbon nature which has been isolated from these oils. In many cases these have now been shown to be mixtures but the nomenclature still persists and the chemistry of these materials is still found under the heading, Terpenes and Campho, rsin standard text books on the subject. It was found early that in the majority of cases the terpenes could be separated from essential oils by distillation. When their flavoring or odor value was compared with the remaining portion of the oil usually it was found that it was very much less.

The removal of the terpenes from an oil is carried out for several reasons. The resulting oil, called a terpeneless oil, is far more concentrated in odor and flavor value. The solubility of the terpenes in diluted spirit is poor compared with that of the remaining portion of the oil which consists of oxygenated constituents so that by employing a terpeneless oil a saving in spirit can be effected. Again the terpenes are easily affected by air so that their presence in an oil can lead to it developing an "off" taste or smell resembling that of turpentine. This of course, especially when the oil is used in powdered products where a large surface is exposed to the air, is a serious disadvantage. As a result the process of removing the terpenes to give a terpeneless oil was developed. This has been carried out in the majority of cases by distillation and has resulted, especially in the case of the citrus oils where the terpene content is so high, to the accumulation in commerce of large stocks of terpenes. The terpenes still retain to a certain degree the flavor and odor characteristics of the parent oil and can be utilized in perfume compositions for soap and also in the flavoring of cheap confectionery but the demand for these two purposes does not utilize all the material available. Many processes have been tried out in order to use these terpenes. Some of them are chemical processes to convert them to another more usuable product, such as the process of hydration of the terpene to an alcohol, the resulting alcohol being more soluble in dilute spirit and usually possessing more odor value. Unfortunately in most cases the results are not as desired.

Calabrian Concrete Essences

In a report on concrete essences produced in Calabria, D. La Face (*Rev. ital. essenze, profumi, piante offic., oli vegetali, saponi* 34:537, 1952, through *Chem. Abstr.* 47:8323, 1953) provides data on the petroleum ether extracts of six plants. For sour orange flowers, the data are as follows:

Yield	**0.26 per cent**
Melting point	**35° C.**
Alcohol number	**22.5**
Ester number	**71.5**

Information on *larandula officinalis* is given as follows:

Yield	**1.2 per cent**
Melting point	**43° C.**
Alcohol number	**15.9**
Ester number	**50.0**

For *narcissus poeticus* the properties are:

Yield	**0.234 per cent**
Melting point	**52° C.**
Alcohol number	**24.1**
Ester number	**85.7**

Data with respect to *Rosa centifolia* are:

Yield	**0.3 per cent**
Melting point	**44° C.**
Alcohol number	**19.9**
Ester number	**49.3**

In considering *Salvia sclarea*, La Face gives the following figures:

Yield	**1.08 per cent**
Melting point	**50° C.**
Alcohol number	**13.7**
Ester number	**33.7**

For *Polyanthus tuberosa* the following figures are given:

Yield	**0.067 per cent**
Melting point	**57° C**
Yield	**0.067 per cent**
Melting point	**57° C**
Alcohol number	**36.1**
Ester number	**74.11**

Determination of Ascaridole

In a paper presented before the British Pharmaceutical Conference of 1953, A. H. Beckett and G. O. Jollife (through *Pharm. J.* 171:245, 1953) reported the observation that the results obtained by the official iodimetric process in the assay of commercial samples of ascaridole and oils of chenopodium differed greatly from the results obtained by the polarographic method. The two methods have, therefore, been investigated in some detail in an attempt to account for the observed discrepancies. These are stated to arise because (*a*) the factor used in the British Pharmacopoeia is incorrect, and (*b*) the amount of iodine in the B.P. method is not directly proportional to the weight of ascaridole added to the acidified potassium iodide solution. The investigators have derived a quadratic expression for the conversion of the titration figures obtained by the B.P. procedure into correct figures of ascaridole percentages. By applying this expression good agreement was obtained between the results given by the polarographic method and iodimetric procedure. The proposed iodimetric method is as follows: Perform the determination as described under Chenopodium Oil B.P. If the number of mils (n) of 0-1*N* sodium thiosulfate required (after deduction of the blank tritration) is within the limits of 20 to 40, then calculate the weight of ascaridole (m) from the formula

$$m = 0.00489n + 0.0000275n_2$$

If the titration is outside the stated limits, repeat the determination using more or less than the stated 5 mils of the acetic acid solution of the oil in order to give a titration of between 20 and 40 mils of 0-1*N* sodium thiosulfate, and apply the above equation.

TOP NOTES by Fritzsche

FRITZSCHE BROTHERS, INC.

FRITZSCHE BROTHERS, INC

FLOWER of the Month

November—Chrysanthemum

December—Narcissus
or Holly

MAYBE YOU KNOW HIM . . .

HE'S tall, lean, auburn-haired and good-natured . . . an altogether nice guy who'll give generously of his time, energy and ability any time to help a customer. Maybe that's why buyers all up and down the western coast from Seattle to San Francisco are giving JOHN BRICKNER the business . . . *their* business in flavors, perfumes and essential oils! After his graduation from Loyola of Los Angeles with a degree in chemistry, John served two years in the Navy. Then, in July 1948, he joined Fritzsche Brothers and for the past five years he's served us with the same distinction he served Uncle Sam. The womenfolk in his family—Patty, his wife, and daughter Theresa—accept with tolerance his love of football which he watches at every opportunity, and—with diminishing patience—the drag-out painting job (begun five years ago!) he's doing on their house. For this, though, he's easily forgiven when it's realized what a fast, well-planned, time-consuming job he's been doing in his far-flung territory for the House of Fritzsche!

RECOMMENDATION of the Month

FRENCH AIRE

This is a heady, fashion-setting fragrance embodying the airy freshness of cologne with insinuating overtones of delicate florals and Oriental spices. Suffused within the fabric of this fragrance is a deeper, woody note, neutral in character, that lends subtle distinction to the finished perfume. FRENCH AIRE is a new offering at $35.00 per pound; $2.25 for the trial ounce.

A THOU

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Ohio, Cleveland, Ohio, *Los Angeles, California, Philadelphia, Pennsylvania, San Fran
St. Louis, Missouri, *Toronto, Canada and *Mexico, D. F. FACTORY: Clifton, N. J.

A THOUGHT for the Month:

"If you wish success in life, make perseverance your bosom friend, experience your wise counsellor, caution your elder brother, and hope your guardian genius."

—ADDISON

Good Scents

FOR PERFUMERS

TESTED PERFUMES for COLD WAVE SETS

Much is demanded of the perfumes intended for use in thioglycolate wave-set formulations. They must provide effective coverage of the disagreeable ammonia-sulphide odor, imparting at the same time a certain nicety of fragrance that is lasting and stable. Non-discoloration is also desirable. All of these considerations have been faithfully observed in the development of our present fine selection of ready-to-use Wave Set Perfumes. A wide variety of fragrances is available. Write us for price list and odor selections recommended.

A NO. 1 FRAGRANCES for BATH POWDERS and TALCUMS

Offered below is a selected list of tried and tested fragrances for bath powders and talcums, each composed of skillfully blended materials, stable, well-fixed and fully compatible with other ingredients. For a practical test of these compositions, see our offer below.

ORIENTAL F-891	$ 6.75 lb.
SWEET PEA I-057	$ 6.00 lb.
BOUQUET J-551	$ 7.00 lb.
ROSE 0-135	$ 4.00 lb.
CARNATION S-433	$ 6.50 lb.
LILAC 0-835	$ 4.00 lb.
TREFLE B-605	$12.00 lb.
SPICE K-537	$ 4.00 lb.
BOUQUET T-378	$ 8.00 lb.

***TRIAL OFFER:** We'll send you ½ oz. samples of any THREE of these powder perfumes if you will fill in and return the coupon below accompanied by check or money order for $1.00 to cover cost of packing and handling.*

TRIAL OFFER

FRITZSCHE BROTHERS, Inc.
76 Ninth Ave., New York 11, N.Y.

Gentlemen: Attached is $1.00 (check or money order). Please send me, prepaid, ½ oz. bottles of each of the THREE powder perfumes checked herewith:

NAME .....

TITLE .....

COMPANY .....

ADDRESS .....

CITY .....ZONE....STATE.....

☐ *Attached is $2.50. Please send, prepaid, ½ oz. bottles, of ALL NINE fragrances.*

- ☐ ORIENTAL F-891
- ☐ SWEET PEA I-057
- ☐ BOUQUET J-551
- ☐ ROSE 0-135
- ☐ CARNATION S-433
- ☐ LILAC 0-835
- ☐ TREFLE B-605
- ☐ SPICE K-537
- ☐ BOUQUET T-378

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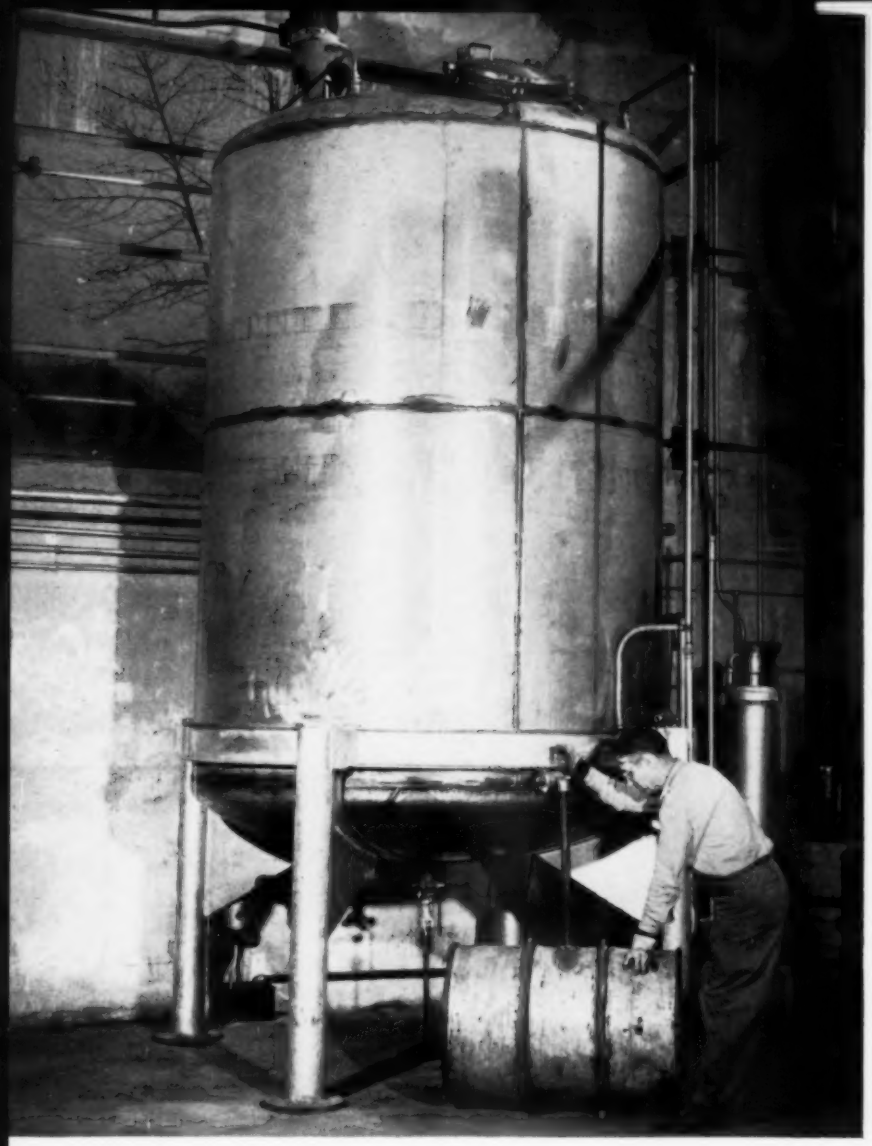

MANUFACTURERS whose operations are large scale and who buy their raw materials accordingly, have a substantial stake in the quality and uniformity of such ingredients. Any facility, therefore, which effects improvement of these is an advantage worthily to be considered. It was for just such gain in quality-uniformity that we installed the big 2500 gallon stainless-steel mixing tank pictured above. This type unit enables us to handle in a single operation the contents of half a hundred ordinary drums which yield, after agitation and clarification, one *absolutely uniform* lot. A degree of uniformity impossible to achieve through the more usual, time-consuming practice of smaller lot bulkings is thus obtained. Quantity buyers, particularly, appreciate the values gained from such facilities.

FRITZSCHE *Established* 1871
Brothers, Inc.

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BRANCH OFFICES *and* *STOCKS: *Atlanta, Georgia, Boston, Massachusetts, *Chicago, Illinois, Cincinnati, Ohio, Cleveland, Ohio, *Los Angeles, California, Philadelphia, Pennsylvania, San Francisco, California, St. Louis, Missouri, *Toronto, Canada and *Mexico, D. F. FACTORY: *Clifton, N. J.*

THINGS COULD BE WORSE....

es, little man—far, far worse. Just for example, there's that medicine your doctor prescribed . . . not only is it going to get you well in a jiffy, but what's more, *you'll love its taste*. Which is one of the nice things about medicines today . . . the folks who make them know that little boys—and for that matter, grown-ups, too—hate unpleasant flavors. So, when they perfect a good medicinal product with a not-too-pleasant taste, they go to great lengths to remove this bad effect. Many of them engage firms like ours—long experienced specialists in the scientific use of flavors—to develop compatible taste effects that will make their pharmaceutical products pleasantly palatable and acceptable. They want you to like their medicines, take them willingly and get well quick!

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Citral and Citronellal

As noted in *The Perfumery and Essential Oil Record* 44:19, 1953) citral and citronellal are two very important raw materials for the manufacture of perfumery synthetics, since from them are derived the ionones, hydroxycitronellal and citronellol.

Citral, $C_{10}H_{16}O$ or $C_9H_{15}CHO$, is found in a number of essential oils. It is the principal constituent of lemongrass oil in which it is present to the extent of 70 to 80 per cent. Also, it is the chief flavor constituent of oil of lemon which usually contains from four to five per cent of this body. Citral as isolated from essential oils is a mixture of two stereoisomeric forms, citral a and citral b, the citral a largely predominating. These two forms are geometric isomers and are known as the *cis* and *trans* forms. Citral is an aldehyde and can be obtained by the oxidation of a primary alcohol. If geraniol is oxidized, citral a (geranial) is obtained while if nerol is oxidized citral b (neral) is obtained.

Citral is usually isolated from lemongrass oil by shaking the oil with a solution of sodium bisulfite or sodium sulfite when the citral goes into solution as a water-soluble compound. The resulting compound is then decomposed to give citral and this is further purified if necessary. Citral is important as a starting point for the manufacture of the ionones. If citral and acetone are allowed to react a substance called pseudo-ionone is obtained. This on further treatment with acid is converted into ionone, which is a mixture of two very similar substances named α- and β-ionone. According to the acid used and depending on the exact conditions under which the conversion of the pseudo-ionone takes place, the ratio of α to β-ionones in the mixture varies and it is possible to get a large preponderance of one isomer by suitably choosing the variants. If instead of using acetone one uses methyl ethyl ketone then the methyl ionones are obtained. Citral is a very reactive substance and is readily acted on by air, becoming yellow with age and it soon resinifies unless it is stored in well filled dark glass bottles. It is also sensitive to the action of acids and alkalis and is soon decomposed by these agents.

Citronellal $C_{10}H_{18}O$ or $C_9H_{17}CHO$ is really dihydro-citral. It occurs in a number of essential oils although it is not widely distributed in nature. The main source is citronella oil, the Formosan and Java types containing about 35 to 45 per cent and the Ceylon type about seven per cent. Eucalyptus citriodora oil contains some 65-85 per cent of citronellal. This aldehyde can exist in three forms, the d-, l- and the dl- or racemic form. It is formed by the oxidation of the primary alcohol, citronellal and conversely gives the latter body on reduction. To isolate it from essential oils use is made of the fact that it forms a bisulfite compound. Care must be taken in releasing the citronellal from this combination since it is very sensitive to the action of acids and alkalis, especially the former. Acids conver it to *iso*pulegol, an alcohol with a mint-like odor while alkalis resinify it very easily. Citronellal is important from the point of view of manufacturing hydroxycitronellal.

Until this substance was discovered it was almost impracticable to obtain the true lily of the valley note in a perfume. This outstanding synthetic is made by hydrating citronellal. To accomplish this the aldehyde group of citronellal is protected by forming the bisulfite compound and this is hydrated by the action of an acid, usually sulfuric acid, under carefully controlled conditions. The hydroxycitronellal is then released from combination with bisulfite. Citronellal, being an aldehyde, on reduction gives an alcohol, citronellol, a most important perfumery material since it is an indispensable constituent of all rose compositions. Large quantities of citronellol are manufactured by this reduction procedure and a variety of reducing agents are employed.

Monosodium Glutamate for Pharmaceutical Flavors

According to J. F. Caul and E. L. Rockwood (*J. Am. Pharm. Assoc.*, Scient. Ed. 42:682, 1953) the value of using a small trained taste panel to define flavor problems is shown by a study of the effectiveness of monosodium glutamate (MSG) in improving the flavor of various fluid pharmaceutical products. The first portion of this study surveyed the potentialities of monosodium glutamate in combating a few typical flavor problems of currently marketed fluid products. It was found that MSG holds promise for reducing metallicness in iron-containing liquids, fish oil aroma in cod liver oil, and aftertaste and bitterness in a variety of preparations.

The second part suggested a means of evaluating a single factor, in this case bitterness and its taste reaction to MSG. Three types of bitter tastes were introduced: short-lived (quinine sulfate); long-lived (caffeine and sucrose octaacetate); and relatively long-lived, having accompanying metallic flavor (barbiturate). No reduction of bitterness was found when small quantities of MSG were added to water solutions of these four chemicals. But in sucrose solution, the barbiturate bitter responded favorably to MSG. This was demonstrated by panel-drawn graphs showing reduction in intensity and duration of bitterness. The action of MSG in this instance was thought to be that of a blender.

Oil of Myrtus Communis

A. F. Costa and J. C. de Vale (*Notic. farm.* 18:194, 1952 through *Chem. Abstr.* 47:10811, 1953) have found the essential oil of the leaves of *Myrtus communis* grown in Portugal had the following characteristics:

Specific gravity	**0.9252**
Specific rotation	**+23.5°**
Index of refraction	**1.4714**
Acid number	**4.5**
Ester number	**73**
Ester number, after acetylation	**115**

The oil contained 25 per cent of esters, principally myrtenyl acetate, 12 per cent of free myrtenol, 36 per cent of cineole, small amounts of alpha-pinene and camphene, and a trace of furfural.

Oil of Ocimum Canum

The essential oil of *Ocimum canum*, (var. physiol. citrata) from East Africa has been studied by P. Rovesti (*Ind. parfum* 8:156, 1953). The essential oil obtained from the aereal parts of the plant in a yield of from 0.67 to 0.84 per cent. The oil, which has a very pleasant smell, had the following properties:

Specific gravity	**0.8989**
Specific rotation	**–5° 16′**
Index of refraction	**1.4983**
Aldehydes (by bisulfite)	**76.9 per cent**
Solubility in 70 per cent alcohol at 15° C.	**1:2**

The following constituents were separated: a 76.9 per cent aldehyde fraction, consisting almost entirely of citral except for seven per cent of citronellal; and 23 per cent of a nonaldehyde fraction containing 25 per cent terpenes, especially limonene, 35 per cent geraniol, 16 per cent linalool, and 25 per cent of esters of the latter two alcohols. It is suggested that the residue after the extraction of citral can be used in place of an ordinary geranium oil.

MERRY CHRISTMAS
CROWN CORK & SEAL CO. • CLOSURE DIVISION • BALTIMORE 3, MD.

Patent Thoughts and Trends

*by Thomas Cifelli, Jr.**
PATENT ATTORNEY

PRESSURIZED CREAM PATENT IN COURT

(*Continued from page 757*)

amount of a suitable petroleum oil fraction. Petroleum oils of the pure, refined industrial white oil type, starting with deodorized kerosene which has a density of about 0.78 at 60° F. and viscosity of 30 to 35 seconds Saybolt at 100° F., and running up to a light mineral oil having a density of 0.84 at 60° and a viscosity of 65-75 seconds Saybolt at 100° F. or higher, may be added in proportions to give the desired low vapor pressure without destroying the lather-producing properties of the composition.

The patent gives a considerable number of other details concerning the amount of oil which may be added, the amount of propellant used, etc. For present purposes it will be sufficient to give the following examples taken from the patent.

Soap Solutions

	Per cent
1. Triethanolamine stearate	8.0
Triethanolamine soap of cocoanut oil fatty acids	2.0
Water	90.0
2. Triethanolamine stearate	10.0
Water	90.0
3. Triethanolamine stearate	3.0
Water	97.0
4. Potassium stearate	10.0
Water	90.0
5. Morpholine stearate	10.0
Water	90.0
6. Triethanolamine stearate	5.0
Triethanolamine soap of castor oil fatty acids	5.0
Water	90.0
7. Triethanolamine stearate	3.3
Triethanolamine soap of cocoanut oil fatty acids	6.7
Water	90.0
8. Triethanolamine soap of castor oil fatty acids	10.0
Water	90.0
9. Triethanolamine soap of soya oil fatty acids	10.0
Water	90.0
10. Triethanolamine stearate	8.0
Sodium stearate	2.0
Water	90.0
11. Triethanolamine oleate	10.0
Water	90.0
12. Triethanolamine stearate	10.0
Triethanolamine oleate	10.0
Water	80.0
13. Sodium lauryl sulfate	10.0
Water	90.0
14. Triethanolamine lauryl sulfate	10.0
Water	90.0
15. Sodium alkyl benzene sulfonate	10.0
Water	90.0
16. Polyoxyethylene ether of alkyl substituted phenol	10.0
Water	90.0
17. Triethanolamine stearate	10.0
Sodium lauryl sulfate	0.7
Water	89.3
18. Triethanolamine stearate	10.0
Polyoxyethylene ether of alkyl substituted phenol	3.5
Water	86.5
19. Triethanolamine stearate	6.7
Triethanolamine soap of cocoanut oil fatty acids	3.3
Triethanolamine lauryl sulfate	5.4
Water	84.6

Shaving Lather Producing Compositions

	Per cent
A. Soap solution 1, 2, 5, 12, 17, 18, 4, 7, 19 or 3	93.33
Dichlordifluormethane	2.6
1,2, dichlor 1,1,2,2, tetrafluorethane	4.07
B. Soap solution 2 or 4	86.3
Dichlordifluormethane	6.0
45 sec. visc. mineral oil	7.7
C. Soap solution 1	83.7
Dichlordifluormethane	9.6
65/75 sec. visc. mineral oil	6.7
D. Soap solution 1	88.5
Dichlordifluormethane	8.4
30/35 sec. visc. kerosene	3.1
E. Soap solution 2	94.7
Dichlordifluormethane	5.3

*GAYLOR, CIFELLI & JURICK Newark, New Jersey.

BENJ. FRENCH, INC.

ESSENTIAL OILS -- AROMATIC CHEMICALS

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PRODUCTS

MUGUET FLEURS A.

The perfect synthesis of the exquisite Lily of the Valley perfume.

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CHEMICAL **KESSCO PRODUCTS** SPECIALTIES

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of Definite Specifications

GLYCERYL MONO STEARATE
PURE AND SELF-EMULSIFYING

KESSCO WAX A-21
FOR ANTI-PERSPIRANTS, DEODORANTS, OINTMENTS

PROPYLENE GLYCOL MONO STEARATE
PURE AND SELF-EMULSIFYING

new

POLYMERIZED GLYCOL STEARATES, LAURATES, OLEATES, ETC.

for

PHARMACEUTICALS, TOILETRIES, COSMETICS ETC.

ESTABLISHED 1921

KESSLER CHEMICAL CO., INC.
STATE ROAD and COTTMAN AVE. · PHILADELPHIA 35, PA.

	Per Cent
F. Soap solution 2	90.1
1,2 dichlor 1,1,2,2, tetrafluorethane	6.6
Monofluortrichlormethane	3.3
G. Soap solution 2	93.8
Dichlordifluormethane	3.2
Trichlortrifluorethane	3.0
H. Soap solution 1	94.0
Difluorethane	3.3
1,2, dichlor 1,1,2,2 tetrafluorethane	2.7
I. Soap solution 2	94.5
Dichlordifluormethane	2.1
Monofluortrichlormethane	3.4
J. Soap solution 2	97.7
Butane	2.3
K. Soap solution 2	97.43
Isobutane	2.57
L. Soap solution 2	97.8
Propane	2.2

Shampoo and other lather producing compositions

	Per Cent
M. Soap solution 7, 8, 13, 14, 15 or 16	93.33
Dichlordifluormethane	2.6
1,2, dichlor 1,1,2, 2 tetrafluorethane	4.0
N. Soap solution 2	94.67
Dichlordifluormethane	5.4
O. Soap solution 2	90.9
Dichlordifluormethane	3.55
1,2, dichlor 1,1,2,2 tetrafluorethane	5.55

What appears to be the broadest claim of the 21 received is claim 1, which is given below:

A package comprising a pressure-tight container having a valve-controlled opening and containing a composition for use in producing a stable lather consisting essentially of a liquid mixture of an aqueous soap solution and a volatile propellant in liquid phase, the composition being confined in the container under the vapor pressure of the propellant, said soap solution comprising a solution which isnon-gelling at room temperatures and which contains at least about five per cent and not substantially exceeding about 30 per cent by weight of soap, said propellant being a halogenated alkane having not more than two carbon atoms and containing at least one fluorine atom, the atomic weight of each substituted halogen atom not exceeding 36, the proportion of propellant being from about 0.2 to about 0.0125 mole per 100 grams of the composition, said propellant having a vapor pressure in the range from about five to about 300 pounds per square inch gauge at 70° F. and having a solubility in water not exceeding about 32 cc. of gas to 100 grams of water at atmospheric pressure and 25° C.

The references cited in the file of the patent are also given below:

United States Patents

Number	*Name*	*Date*
1,892,750	Rotheim	Jan. 3, 1937
2,070,167	Iddings	Feb. 9, 1937
2,435,682	Getz	Feb. 10, 1948
2,524,590	Boe	Oct. 3, 1950

Other References

Fulton, "Propellants for Low-pressure Liquefied Gas Aerosols"; Ind. and Eng. Chem., April 1948, pgs. 699-700.

Ind. & Eng. Chem., August 1949, vol. 41, No. 8, page 7A.

Antibiotic Fungicides

It is well known that antibiotics have been demonstrated to be effective against various types of bacteria. However, they have proved to be of little or no effect on fungi.

Three Wisconsin Alumni Research Foundation inventors have produced an antibiotic fungicide which is adaptable for use in the control of plant diseases, according to U. S. 2,657,170.

They have accomplished their objective by cultivating an Actinomycete, specifically a species in the genus Streptomyces. The active material, called Antimycin, is unusual as an antibiotic in that while it has little or no effect on bacteria including those commonly used in penicillin and streptomycin assays, it is said to be highly effective against a large number of fungi that incite important diseases in plants.

Identical Vitamin Compound Held Not to Infringe

In a recent case, involving Parke-Davis against American Cyanamid, the Court of Appeals, for the Sixth Circuit held that a synthetic antianemia vitamin did not infringe a patent on the identical product made from natural sources.

In coming to the decision, the court felt that the patentees had by their own actions limited their patent coverage to a product made in accordance with the specific process set out in the patent. In this connection, for example, the claims stated in part the limitation that "said acid being the acid derived by autolysis of mammalian liver tissue." In the course of the prosecution, the inventors had substituted the word "derived" for "derivable" and after the change was made the Patent Office allowed the claims. The inventors' attorney had stated in his accompanying remarks that the claims were not to be considered as being limited to the method but were intended to cover the product per se whether made by the described method or any other method, but the court disregarded these remarks.

This holding is sure to be of interest to applicants and

(*Continued on page 857*)

Animal Health

Calcium and Phosphorus in New Pig Rations

Pigs on modern fast-growing rations need more calcium and phosphorus than pigs on older type rations, according to D. Catron (through *Better Iowa*, Oct. 12, 1952). The new ration requires 0.7 per cent calcium and 0.5 per cent phosphorus. The proportion of phosphorus to calcium is important. Experiments at Iowa State College show that bone troubles increase in the pigs when the percentage of calcium to phosphorus is high. They also increase seriously as soon as the proportion of calcium to the total ration gets below 0.4 per cent. Grains and feed efficiency also decline when the phosphorus drops below 0.4 of a per cent, particularly in winter.

Between 1943 and 1950, when the highly fortified pig rations were coming into general use in Iowa but the farmers had not generally changed their mineral feeding to fit the new rations, the interior Iowa packers reported the number of crippled pigs in shipments to their yards almost doubled. This increase in cripples led to the investigation which indicated the new levels of calcium and phosphorus.

Vitamin Supplements for Squabs

The effects of vitamin A plus vitamin D, riboflavin, and vitamin B_{12} on a number of marketable squabs and squab weight at market age were investigated by F. T. Schultz, C. R. Grau and P.A. Zweigart (*Poultry Sci.* 32:762, 1953) utilizing 12 pens of 35 pairs of pigeons each. It was found that supplementation with riboflavin increased squab number significantly. Vitamin B_{12} appeared to have had a beneficial effect on squab number although the data were not statistically significant. Most of the increase in squab number was due to an increase in hatchability, which was apparent in both riboflavin and vitamin B_{12}-supplemented groups. Some of the increase in squab number from riboflavin supplementation was due to an increase in livability, but vitamin B_{12} had no such effect. There were no differences in the number of eggs laid.

Squab weight was not affected consistently by the diets. When the diet contained green peas and the pigeons were exposed to sunlight, the supplement containing vitamin A and D had no effect.

Growth-Stimulating Action of Antibiotics

A new view on the mechanism of action of antibiotics in stimulating growth in animals on marginal or deficient diets was presented by B. C. Johnson and his colleagues at the 124th meeting of the American Chemical Society. They pointed out that a mechanism of action of antibiotics in promoting growth by suppressing "disease" has been established by Kon and coworkers. However, another mechanism appears to be acting in the case of antibiotics "sparing" certain B vitamins. In work carried out over the past two years Johnson and his associates have studied the interrelationships between the following: aureomycin and vitamin A, Terramycin and methionine, aureomycin and thiamine, penicillin and thiamine, streptomycin and pantothenic acid, various surfactants and thiamine, and arsanilic acid and thiamine. It was found that while antibiotics "spared" thiamine and pantothenic acid, they did not have any effect on vitamin A, and in contrast to the antibiotics, the surfactants and arsanilic acid had no effect on the B vitamin requirements. The growth rate increase on a low methionine diet brought about by terramycin was found to be entirely due to an increased fat deposition. It has been observed that with baby pigs and chicks on certain "complete" (highly fortified) diets antibiotics give little or no growth stimulation as compared to that on more marginal diets. This may indicate a sparing of unknown factors analogous to the relationships shown above for known B vitamins. Using radiothiamine as a tracer it has been found that the function of penicillin in sparing thiamine is not to change the utilization of dietary thiamine by any mechanism but to increase the production of the vitamin in the intestinal tract.

Diet for Orphan Puppies

According to M. L. Morris (*Vet. Med.* 48:421, 1953) mixtures of cow's milk, to which lime water is added in varying amounts, have been recommended for orphan puppies by many breeders for years. Such mixtures are deficient in essential fat, protein, calcium, and phosphorus, are too high in lactose, and unbalanced in vitamin proportions. Morris recommends that a formula be prepared simulating as closely as possible bitch's milk. Fat content should be raised to approximately 12 per cent by additions of cream, butter fat, corn oil, lard, or egg yolk to either whole or diluted condensed milk (one part of milk to one of water). Vitamins, particularly those of the B complex group, should also be added to balance the formula.

Toluene for Worms in Dogs and Cats

An evaluation of toluene as an anthelmintic for intestinal nematodes in dogs and cats and a comparison of its efficacy with that of n-butyl chloride has been made by F. D. Enzie and M. L. Colglazier (*Vet. Med.* 48:325, 1953). They found that in therapeutic doses, approximately 0.1 cc. per pound of body weight, toluene removed 97 per cent of 272 ascarids from 15 dogs, 87 per cent of 6,711 hookworms from 56 dogs, and 39 per cent of 2,720 whipworms from 42 dogs. With the exception of occasional vomiting, the drug was well tolerated in all respects. Therapeutic doses of toluene, approximately 0.1 cc. per pound of body weight, removed 99 per cent of 205 ascarids from 25 cats and 100 per cent of 28 hookworms from three cats. Several animals vomited but there was no apparent nausea or inappetence. In all available trials to date, therapeutic doses of toluene removed 96 per cent of 846 ascarids from 59 dogs, 87 per cent of 7,579 hookworms from 108 dogs, 41 per cent of 2,881 whipworms from 48 dogs, 98 per cent of 389 ascarids from 44 cats, and 89 per cent of 199 hookworms from 16 cats.

Enzie and Colglazier feel the dosage

of toluene for puppies and kittens should be limited to 0.1 cc. per lb., but some latitude is permitted in this regard with older animals.

These investigators conclude that toluene is a safe and effective treatment for removal of ascarids and hookworms from dogs and cats, but it is not uniformly effective against the dog whipworm. The drug compares favorably in efficacy and safety with n-butyl chloride as a general anthelmintic for small animals and appears to be superior to the latter in simplicity of dosage and range of action.

Copper and Cattle Growth

The influence of copper on the growth rate of cattle is discussed by H. I. Field (*State Vet. J.* 8:1, 1953 through *Vet. Rec.* 65:593, 1953). He reports that in 1949, on a once-derelict reclaimed area of fenland in West Suffolk, unthriftiness in Hereford and Hereford Cross-bred Shorthorn cattle was found to be due to copper deficiency. Classical symptoms occurred, and first appeared in calves nine to ten weeks of age. In copper-deficient areas this is usual in beef herds, as calves are born from already copper-deficient mothers in the spring, and subsequently run out at grass without supplementary copper. Dairy calves, usually born in the autumn, receive copper in proprietary foods during their first winter and consequently show no symptoms until a year old.

Experiments with cattle in the area showed: (1) that providing spring calving, pregnant cows with copper prevented deficiency in their offspring during their first summer. The calves gained 2.2. pounds per day as compared with 1.5 pounds in the undosed controls; (2) the growth rate of cattle 12 to 30 months old approximated that of cattle in normal productive agricultural areas when copper was added to the diet. To obtain this result copper was supplied to yarded cattle during each winter. Summer grazing on deficient pasture depleted reserves built up during the previous winter.

Arsanilic Acid in Animal Rations

In a paper presented at the 42nd Annual Meeting of the Poultry Science Association, D. V. Frost and H. C. Spruth (through *Poultry Sci.* 32:900, 1953) report that recent studies indicate that arsanilic acid is well tolerated by White Leghorns to 12 weeks at 0.1 per cent of the ration—ten times the recommended feeding level. Previous studies indicated a safety margin of only three times the recommended level. Arsenic trioxide content of liver and muscle averaged 7.0 and 1.6 p.p.m., respectively. Ducks, chickens, turkeys, swine and dogs appear to show a decreasing order of tolerance to arsonic acids. Arsanilic acid may promote growth of swine up to 0.02 per cent of the diet from weaning to market. Much higher levels may result in damage to the optic nerve in swine, a specific toxicity symptom noted early by Koch following overdosage with atoxyl in human trypanosomiasis.

Experiments in chicks and rats showed the inability of arsanilic acid to spare requirement for vitamin B_{12} and pantothenate, whereas antibiotics spared both. The need for supplying adequate B_{12} when studying arsonic growth effects in swine or chicks became clear. Desirable effects of arsonic acids, especially effects over antibiotics, reflect the ability to control both specific and non-specific disease situations. *In vitro* studies showed arsonic acids to be more bacteriostatic to clostridium than to other common intestinal organisms studied.

PLANT HEALTH

Antibiotics for Plant Diseases

Growing interest in the use of antibiotics in the treatment of plant diseases is evident in the number of articles published recently. For example, the October, 1953, issue of the *Chemurgic Digest* cites the fact that at the September meeting of the American Chemical Society, W. J. Zaumeyer reported that halo blight of bean plants, a perennial plague infecting thousands of acres, has been arrested and cured with a water spray containing small amounts of streptomycin. This disease, like fireblight, is caused by a bacteria. In Zaumeyer's experiments, 2,800 plants were divided into treated and untreated plots. A water solution of one per cent streptomycin sulfate gave almost 100 per cent protection against the disease with three sprayings. The first application was made when the first leaves were three-fourths open and the other two sprays at weekly intervals thereafter.

This publication also cited the report presented by R. N. Goodman before the American Institute of Biological Sciences in which he stated that the successful use of antibiotics in the control of fireblight, a hitherto incurable disease which has killed millions of apple (and pear) trees during the last century in the U. S. and all but eliminated pear-growing as an agricultural industry. Using concentrations of from 100 to 500 parts of antibiotics per million of water, he found a combination of Terramycin and streptomycin effective in control of the blight in tests involving 112 diseased apple trees.

Of related interest is the report of H. F. Winter and H. C. Young in the September-October issue of *Ohio Farm and Home Research*, in which it was pointed out that preliminary work in the laboratory and greenhouse showed that certain antibiotics would inhibit the growth of the bacterium causing fireblight, and that apple trees would absorb quantities of some of them sufficient to prevent infection of the treated trees. Of the materials tested streptomycin and Terramycin have shown the most promise.

Foliage Sprays of These Antibiotics

Foliage sprays of these antibiotics were tested in the Spring of 1953. Streptomycin at 120 and 60 parts per million in the spray allowed only two and eight per cent blossom blight, respectively, and zero and 0.5 per cent twig blight. Three applications of streptomycin, therefore, at 120 parts per million (5 oz. of a 30 per cent commercial grade material per 100 gallons of spray) gave almost 100 per cent control of blossom and twig blight under conditions of very severe artificial inoculation. Terramycin at 120 and 60 parts per million allowed nine and 20 per cent blossom blight, respectively and 0.2 and five per cent twig blight.

The November, 1953, issue of the British publication, *Chemical Products* notes editorially that comparatively recently, antibiotics specific against plant pathogens have been isolated. Antimycin, hellixin and toximycin are all effective against apple scab experimentally, and against early blight development in tomatoes. The anti-fungal antibiotic, griseofluvin, is relatively phytotoxic and can be taken up by some plants into their tissues and may thereby give them added resistance to disease. It is suggested that griseofluvin is stable in some soils under certain conditions, and that if the molds producing this compound were present in the soil we should have an *in situ* method of producing the antibiotic continuously.

ANSWERS TO YOUR QUESTIONS ABOUT ROCHE VITAMIN A

Q. *What is Roche vitamin A?*

A. It is vitamin A, the product of a synthesis which starts with Citral, from lemon grass oil. It is identical biologically with the vitamin A from other sources, such as fish livers. A Roche research team directed by Dr. Otto Isler announced their famous synthesis in 1947. This successful, economical process is now used to produce vitamin A of superb quality by the tons at Roche Park.

Q. *Does Roche vitamin A have a "fishy" odor or taste?*

A. None whatever, nor is there any "fishy burp." In fact, Roche vitamin A has almost no odor or taste and so is preferred for pharmaceutical preparations.

Q. *Will I be able to get a steady supply of Roche vitamin A?*

A. You will. The entire commercial needs of the food and pharmaceutical industries of the United States and Canada could be met from our Nutley plant.

Q. *Can I be sure of a "standard" product?*

A. You can. Roche vitamin A is manufactured under strict laboratory control. It is more stable. It is uniform. The regular commercial types of Roche material, if diluted to 50,000 to 65,000 units per gram, will meet the specifications of U.S.P. XIV for oleovitamin A. It is a product of excellent quality.

Q. *What about price?*

A. Roche vitamin A is not subject to wide fluctuation of price, as has been true with vitamin A from natural sources. This can mean large savings for you as there is no need to carry large inventories as was the case prior to the introduction of Roche vitamin A in 1950. Never before has the purchaser been assured of such low prices, consistent with quality and uniformity.

Q. *How is Roche vitamin A packed?*

A. All Roche vitamin A is packed under conditions which assure its stability in customary shipment and storage.

Q. *Can I get help from Roche in using vitamin A in my products?*

A. Certainly. The technical experts at Roche are ready at all times to help you. If you need samples, please send your requests to the Vitamin Division. For years many industries—canning, baking, milling, pharmaceutical manufacturing—have looked to Roche as their headquarters for information about, and supplies of, vitamins. It is important to you that Roche specializes in the manufacture of vitamins.

Q. *Is Roche vitamin A available in different types and potencies?*

A. It is. The following table shows the types most popular in pharmaceutical manufacturing.

TYPE	DESCRIPTION	POTENCY	ADDITIVE*
P1MO	Vitamin A palmitate	1,000,000 U.S.P. XIV units per gram	Edible oil only for standardization
P1.3	Vitamin A palmitate	Ranging between 1,250,000 and 1,500,000 U.S.P. XIV units per gram	None
A1MO	Vitamin A acetate	1,000,000 U.S.P. XIV units per gram	Edible oil only for standardization

*Antioxidants or other additives are included on customer's specifications.

Notes: Type P1MO has less tendency to crystallize during storage and handling than higher concentrations of vitamin A palmitate and acetate.

Type P1.3 is more susceptible to crystallization than type P1MO but can be handled without difficulty when using certain precautions.

Two other types of vitamin A palmitate and acetate are also available. They may be used for research and special production in which special handling can be provided. They are: Type P1.8 vitamin A palmitate—1,650,000 to 1,800,000 U.S.P. XIV units per gram and Type A2.9 vitamin A acetate—2,900,000 U.S.P. XIV units per gram.

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Abreast Of The Markets

Warm Weather Continues to Delay Replacements; Mercury Up; Vanilla Firm, Menthol Confusing

There was an increased activity in the markets during November, with many firms making their regular Fall purchases. This activity seemed to have very little effect, however, since most essential oils and botanicals maintained their former prices. What changes there were, in most cases, amounted to less than a dollar.

In the domestic essential oils, crops were generally normal in size, such as in spearmint and wormseed oils. This is also true of the citrus oils, with the one exception of lemon oil which is extremely firm. Because the new crop is not expected for several months, there is a limited amount of the oil available on spot. The Italian oil is quoted at $10, considerably higher than the Californian oil which ranges between $7.25 and $7.65 a pound.

This price differential has created a firmness in that consumers have bought large quantities of the Californian oil to such a degree that there is a shortage which the Italian oil has not been able to alleviate.

On the botanical side of the picture, also, there were scattered price changes of limited scope. Anise seed star, of course, continued to be extremely scarce in view of the great difficulty of replacement. Vanilla beans continued the firm trend that has been going on for over a year. All the various types of beans showed increases owing to the lack of replacements.

On the fine chemical side of the market, menthol continued to show an unseasonable sluggishness, probably because of the warm weather during the late Fall months. The price of the menthol is the lowest it has been for a long time, but even this factor has not given any impetus to the market.

Spokesmen in the industry report, moreover, that the unseasonable weather has caused many irregularities in the markets, because it has delayed the routine purchases in many cases of winter replacement items.

Prices quoted in this section were current on the first of this month.

It is not possible at this time to predict how the market will proceed after the turn of the year; however, most sources indicate that business is favorable, and they expect it to continue to be so.

Carnauba Wax Active

Demand for Carnauba wax has been exceedingly active in the past few weeks, with the result that increasing amounts have been arriving in this country from Brazil. The North Country No. 3, refined, is now being quoted from 90 cents to 92 cents a pound.

Mercury Higher

Although the current demand for quicksilver is on the sluggish side, the price inched up $2 last month and is now quoted from $186 to $191 on spot. The chief cause of the increase appears to be the difficulty in replacement from European sources—Italy and Spain.

Vanilla Beans Continue Firm

The very tight position which has been developing in vanilla beans during most of this year showed even more firmness last month when the various types advanced considerably in price. The Bourbon beans went up to the range between $6.75 and $7.25, while the Mexican cuts extended between $6.75 and $7, and the Mexican whole beans, from $7 to $7.50 a pound. The Tahiti beans were higher at $5.50 on the inside price and $5.75 at the upper level.

The overall picture seems to be one of continuing firmness for a long time to come. Spot stocks are very small, according to spokesmen, who state that most incoming shipments of beans are sold before they arrive.

Benzaldehyde Active

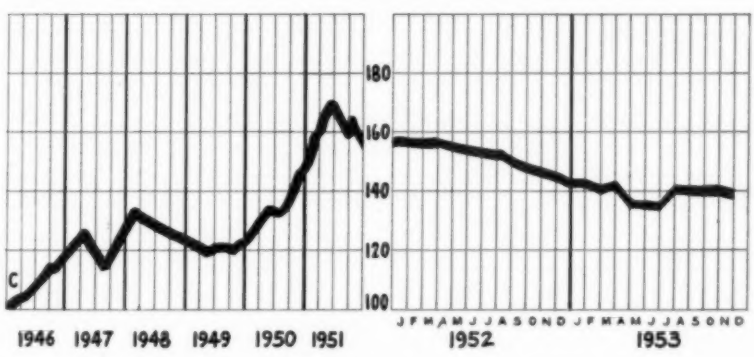
Benzaldehyde showed considerable activity in November on the spot market, although there were no developments pricewise. Spokesmen believe the price will remain at the 74-cent level.

Menthol Remain Sluggish

With the prices of menthol extending from $5.10 to $5.20 for the natural Brazilian material, and from $7.40 to $7.50 for the Japanese natural, the entire market is in a confused state. These prices are the lowest at which menthol has been quoted in a number of years, and still there is very little demand at

(*Continued on page 832*)

25 Cosmetic Raw Materials—Unweighted Price Index. 1926=100.



The cosmetic raw materials index declined from 140.5 to 138.3. Alcohol, balsam tolu and menthol were lower.

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Anethole Advances As Demand Increases; Alcohol Is Reduced; Rhubarb Root, Anise Seed Limited; New Source For Lemon Oil

W. Sanderson & Sons of Messina, Italy, producers of Italian lemon oil, U.S.P., are now making available lemon oil from Argentina. It is produced by the same growing and processing methods and technical know-how as the Italian material. Sanderson reports that the Argentinian oil is of excellent quality and meets all U.S.P. specifications. The factory, in Concordia, Argentina, is a modern, streamlined operation, the only one of its kind in South America.

The Argentinian lemon oil is now available through Dodge & Olcott, Inc., sole agents for W. Sanderson & Sons in the United States. The price is $8.25 a pound, f.o.b. New York.

Anethole in Great Demand

With a much-increased demand for anethole in recent months, the price of this item has now climbed to $1.25 a pound for the N.F. material. The chief reason for the rise in anethole consumption has been the scarcity in anise oil and the subsequent dependence by consumers on substitute materials.

Ergot on Firm Side

Ergot held at $3.75 a pound last month, with available stocks on the limited side. There was enough material, however, to handle current requirements.

Rhubarb Root Scarce

Chinese rhubarb root, as might be expected, continued to be extremely difficult to obtain last month, in view of the replacement problem which has been present since the embargo on Chinese commodities. The root was selling at prices between 90 cents and $1, while Indian material was being quoted in the vicinity of 40 cents.

Alcohol Reduced

Prices of the various grades of alcohol were reduced by five cents a gallon during November as a result of the completion of a new synthetic-alcohol plant. Because former alcohol production, without the new plant, was able to meet industry needs with no difficulty, the addition of new facilities is expected to increase the competition among suppliers by a great degree.

At the same time, it has been pointed out, the production of fermentation alcohol has been falling off considerably as a result of the greater activity in synthetic production.

The new price schedules put denatured No. 1 Special alcohol at 45½ cents a gallon, and the ethyl alcohol, 190 proof, U.S.P., at $20.38 a gallon.

The following data on supply, production, withdrawals and stocks of ethyl, completely denatured and specially denatured alcohol were released last month by the Alcohol and Tobacco Tax Division of the Bureau of Internal Revenue, Treasury Department. These figures compare the stocks for September, 1953 with those of September, 1952.

	Gallons	
	1953	1952
Production		
†Ethyl	28,995,018	36,438,531
*Completely denatured	62,996	54,546
*Specially denatured	18,020,095	16,931,576
Withdrawals		
†Ethyl, tax paid	2,217,885	2,057,328
*Completely Denatured	59,715	63,328
tax free	33,880,701	31,780,162
Specially denatured	18,257,051	16,734,845
Stocks		
†Ethyl	65,273,691	87,429,794
*Completely denatured	25,908	26,112
*Specially denatured	6,525,916	7,299,735

*Wine gallons. †Proof gallons.

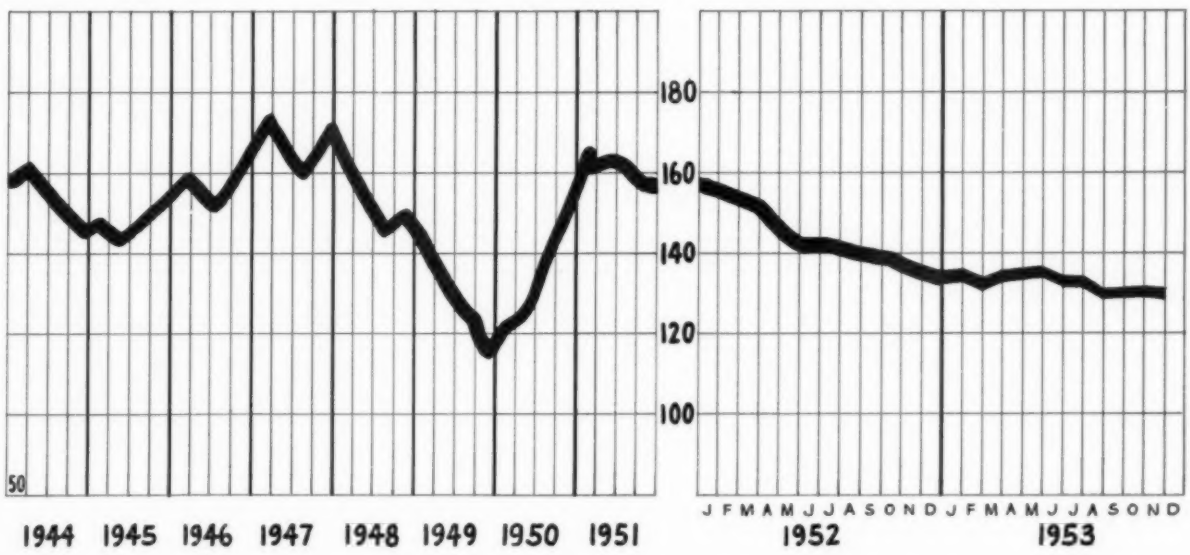
Anise Seed Star Nominal

Anise seed star, which has been extremely difficult to obtain for many months, was virtually non-existent on the spot market in November. Most dealers declined to submit any quotations on it, saying they had nothing to offer.

Cascara Sagrada Steady

The price of cascara sagrada remained at 36 cents a pound last month, with most sources reporting a normal demand

50 Raw Materials—Weighted Price Index. 1926=100.



The price index of fifty commodities for November fell off from 130.9 to 129.2.

NOVEMBER PRICE CHANGES

UP

Anethol 25c
Anise, Spanish 3c
Anise Oil, USP 40c
Citronella Oil, Java 7c
Dill Oil 2c
Mercury $2
Mullein Flowers 15c
Senega Root 20c
Vanilla Beans, Bourbon 75c
Mexican Cuts 25c
Mexican Whole 50c
Tahiti 75c

DOWN

Alcohol Denatured No. 1, Special 5c
Balsam Tolu 10c
Barbital 50c
Clove Oil $2.50
Ipecac Root 50c
Menthol, Natural 50c
Pennyroyal Oil 15c
Pimento Berry Oil 25c
Sabadilla Seed 25c
Sage Oil, Dalmatian 50c
Spearmint Oil 70c
Tansy Oil 30c

for the item. There was ample material in the spot market to handle all needs.

Barbital Reduced 50c

The price of barbital and sodium barbital was reduced 50 cents during November, marking the first time in about three years that a change has taken place. The new price of barbital is $4.50 a pound in 100-pound lots, and $4.75 a pound for the sodium salt on the same basis.

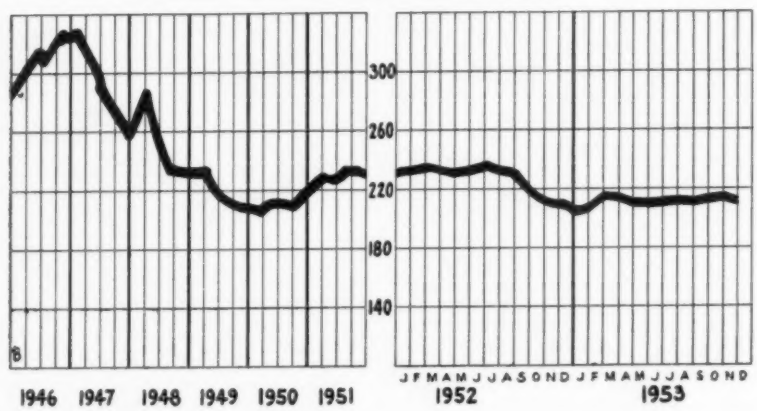
Wahoo Root Scarce

Wahoo bark of root was being quoted in the range between $2.10 and $2.20 during the end of November, with very little material on hand. Sources indicated that the root was extremely difficult to obtain, and that it had become very scarce.

15 Medicinal Chemicals—Weighted Price Index. 1026=100.

The medicinal chemicals index advanced from 101.8 to 104.1. Menthol was lower; mercury was higher.

15 Botanicals—Weighted Price Index. 1926=100.



The botanicals index declined from 214.0 to 212.2. Balsam tolu and ipecac root were lower.

Menthol Remains Sluggish

(Continued from page 829)

the present time. The synthetic menthol price is established at $4.95 a pound, which is a trifle less than the Brazilian. Should the weather turn colder for an extended period of time, the menthol market would probably become very active, and these prices would then adjust themselves according to the demand.

Sarsaparilla Root Uneventful

Sarsaparilla root was in moderate demand during November. Some reports indicate that shippers are about to increase their shipping prices on the Honduras material, but up to the present time this has had no effect on the spot market. The Honduras sarsaparilla is still selling for 43 cents a pound on the inside price, and 45 cents at the upper end of the range.

Citronellal Unchanged

In spite of the advance in citronella-oil prices, citronellal remained at $1.50 a pound. It is the concensus in the trade, however, that this item may advance in the near future, should that trend continue in respect to citronella oil.

Citronella Oil Up a Little

Because of higher shipping costs, Java citronella oil advanced to 72 cents a pound last month over the previous figure of 65 cents. The ceylon variety remained at the 55-cent level.

Cajeput Oil on Firm Side

The inside price of cajeput oil remained at $2.50 a pound last month, although stocks were on the limited side. If a price change does develop in the future, it probably will be an advancing one.

Sage Oil Down

The price of sage oil, Dalmatian, was down as much as 50 cents in some quarters, with prices ranging from $7.50 up to $9, according to seller. The Spanish oil remained at $1.35.

Avocado Oil Limited

Avocado oil continues to be quoted at $3.25 a pound, a level at which it has been for several months. Since this oil

is produced by a very limited number of sources, and since much of the avocado fruit is sold for eating, the available oil supply is exceedingly small at the present time.

Anise Oil Higher

With the continued difficulty in obtaining anise-oil replacements, the price of this item advanced further last month to $2.75 a pound, and ranged up to $3.50. Stocks on the spot market are, as might be expected, extremely limited at the present time, with an increasing number of essential-oil houses dropping the oil from their lists.

Eucalyptus Oil Steady

Eucalyptus oil remained at 95 cents a pound in November, with the demand on the light side. Dealers expect this oil to be sluggish during the coming winter months, with no increased buying due until the second quarter of 1954.

Orange Oil Active

Demand for orange oil was about normal last month, according to dealers, who stated that this particular oil is now in a favorable supply position. American cold pressed oil continued to range from 90 cents to $1.75, while the American distilled extended from 80 cents to $1.25.

Cinnamon Oil on Quiet Side

Cinnamon bark oil demand was on the quiet side last month, it being reported that there was more than enough material on hand to take care of the needs. The price began at $19.50 a pound. The leaf oil ranged around $1.25 a pound, with some quarters expecting a price increase in future weeks.

Tansy Oil Lower

The price of tansy oil was reduced last month to $8 a pound, with the upper end of the range extending to $9.

Lemongrass Oil Remains Firm

Because of higher shipping costs, lemongrass oil is exhibiting firm tendencies, with the range continuing to extend between $1.25 and $1.65.

Pennyroyal Oil Sluggish

There was only slight interest in pennyroyal oil last month, and the price in some quarters fell off to $2.10 a pound, ranging up to $3.85. There were no indications as to whether or not there would be any additional changes in the immediate future.

Bergamot Oil in Question

It had recently been suggested that bergamot oil might drop in price toward the end of this year, but now that December has arrived, the prospects for such a move appear dim. Chief among the opposing factors is the damage wrought on the trees chiefly in the Calabria area by the recent floods. Although the concensus has been that the $11.25 price of the oil is too high for large-quantity purchasing, and that the limited sales might force the price down, this line of thought has apparently been cancelled now.

Instead of looking for a lower price in bergamot oil, some consumers are turning to synthetic preparations as substitutes.

Peppermint Oil Unsteady

While some sources indicate a firmer trend in peppermint oil, prices in general remained as they had been, ranging from $4.50 for the natural oil, to $4.90 for the redistilled. Because producers are seeking to advance their prices on the oil, it is very likely that this strengthening trend will be reflected on the spot market this month or in January.

Clove Oil Plummets

Clove oil last month dropped to $6.75 a pound from the previous figure of $9.25. The current price level of the oil is the lowest it has been for well over a year. The supply picture has improved immeasurably during the intervening months, according to spokesmen, with more favorable crop conditions at the origin. Dealers expect further reductions in the bud oil in future months.

Geranium Oil Steady

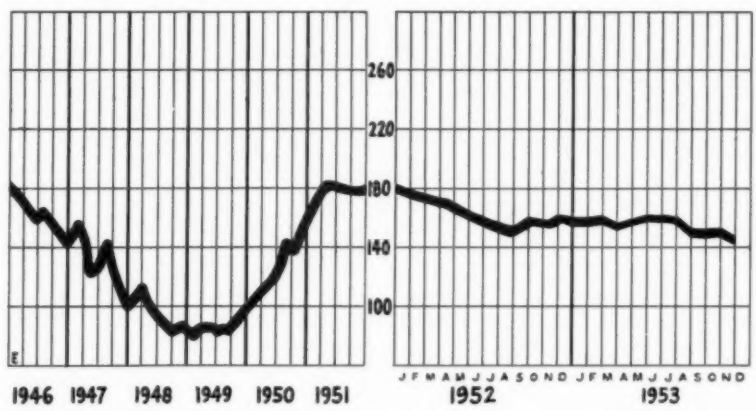
While some sources expected geranium oil to fall off during this period, such a reduction has not occurred up to the present time. On the contrary, some sources report, owing to the small crop in early Fall, that the Algerian oil may become firmer. Both oils were selling at lower prices a short time ago, and during this period, considerable material was sold. This has brought about additional firmness at the present time. The African oil is now selling at $10 a pound, and the Bourbon, at $12.

Lemon Oil Firm

There has been no change in the California lemon-oil picture, contrary to what might be expected. With a new crop coming due this month, December, under normal market conditions, the price would probably soften a bit. The price for the California material ranges from $7.25 to $7.65 a pound.

Adding to the firmness of the California oil is the fact that there is not a sufficient quantity of good-quality Italian lemon oil to make up for the lack of the domestic oil. What Italian oil does exist, according to reports, is too high priced to be attractive to consumers, since it hovers around $10.

15 Essential Oils—Weighted Price Index. 1926=100



The essential oils index declined from 150.0 to 144.1. Anise oil was higher; clove oil was considerably lower.

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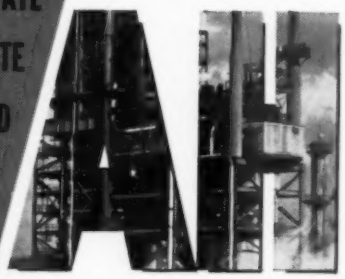

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Industry's Books

(*Continued from page 819*)

exchange and partition methods of chromatography, together with the most recent apparatus. Each chapter is arranged for speedy, day-to-day reference —first, the techniques of the method under discussion; then the applications of the method to chemical and biological research. Detailed instructions and diagrams are provided for setting up chromatograms which may be used for rapid identification of reactions and hydrolyses, and for purity determinations. This book, with its wealth of usable, how-to-do-it information, will prove indispensable to analytical and industrial chemists, and to research workers in many fields wherein chromatographic methods are or could be applied.

Fabricated Materials and Parts, by Theodore C. DuMond, Editor, Materials & Methods, 332 pp., Illus., Book Div., Reinhold Publishing Corp., New York, (1953), Cloth, $6.50.

This book describes 20 major methods of making small industrial parts. Fully discussed are such important considerations as costs, materials used, advantages, limitations, design factors, and the sizes and tolerances possible with each of these methods. DuMond's book was written for the design, production, project or materials engineer, the purchasing agent and the company executive, all of whom are responsible for how a part is produced. It outlines the influences of all factors involved, and offers a great deal of working information previously available only from many widespread, hard-to-find sources.

Antibiotics, by Robertson Pratt, Ph.D., Professor of Pharmacognosy and Plant Physiology, University of California College of Pharmacy, and Jean Defrenoy, D.Sc., (Paris), Research Associate in Antibiotics, University of California College of Pharmacy, Second Ed., Illus., 398 pp., J. B. Lippincott Co., Phila., (1953), Cloth, $7.50.

Important discoveries based on principles developed earlier in the study of antibiotics have emerged from the more than 7,000 research papers that have appeared in the four years since the first edition was published. For a clear perspective of the field of antibiotics these discoveries must be considered in relation to the previously established facts and principles, some of which in turn must be re-evaluated in relation to the newer developments. To that end, five new chapters have been written, and the earlier material has been revised. To show each new phase of the subject of antibiotics in its proper perspective, this edition has been organized into four parts: Fundamental Aspects, Industrial Aspects, Applied Aspects, and Modification of Biologic and Social Systems. At the end of each chapter a few guides to the pertinent literature are listed.

Organic Syntheses, by various contributors, Volume 33 (1953), 115 pp., John Wiley & Sons, Inc., New York, Cloth $3.50.

This is an annual publication of satisfactory methods for the preparation of organic chemicals. This volume No. 33, contains methods for: 3-Acetamido-2-Butanone; Alloxantin Dihydrate; Atrolactic Acid; Benzhydryl B-Chloroethyl Ether; Benzoguanamine; Butyrchloral; Cresol; Di-tert-Butyl Malonate; Diethyl 1, 1 - Cyclobutanedicarboxylate; Diethyl y-Oxopimelate; p-Dimethylaminobenzaldehyde; Dimethylketene; 2,2-Dimethylpyrrolidine; Ethyl a-(1-Pyrrolidyl) propionate; 9-Fluorenecarboxylic Acid; Durfural Diacetate; Itaconyl Chloride; 3-Methylcoumarone; 1, 5 - Naphthalenedithiol; 1,4 - Naphthoquinone; Nicotinonitrile; m-Nitrobenzazide; m-Nitrobiphenyl; o-Nitrocinnamaldehyde; m-Nitrostyrene; 6-Nitroveratraldehyde; 4-Pentyn-1-o1; a-Phenylcinnamic Acid; 4-Phenyl-m-Dioxane; o-Phenylene Carbonate; 3-Phenyl-1-Proponol; Pyridine - N - oxide - 2 -(1 - Pyrrolidyl) - Propanol; Stearone; cis - Stilbene; a-Tetralone; 3-Thenaldehyde; 3-Thenoic Acid; 3-Thenyl Bromide; a.b. b-Triphenylpropionic Acid.

Bacterial Genetics, by Werner Braun, Ph.D., 238 pp., Illus., W. B. Saunders Co., Phila., (1953) Cloth, $6.50.

This book presents the more important findings and principles of bacterial genetics to those primarily trained, or being trained, in bacteriology, and it tries to provide a basis for better evaluation of the relationship between bacterial genetics and such diverse problems as pathogenesis, general laboratory techniques, bacterial physiology, epidemiology, therapy, and taxonomy. Beginning with a review of those general principles of genetics which are necessary for the understanding of bacterial genetics, the text endeavors to furnish a general account of the present status of bacterial genetics in a manner which is elementary enough for the beginner and sufficiently comprehensive to be of value for the research worker. But even though this book was written with the needs of bacteriologists in mind, its contents should also prove useful to students and research workers in the general field of genetics. The latter may find here not only a compilation of progress in an allied field but als information that should be of value to basic genetic problems.

Fundamentals of Biochemistry in Clinical Medicine, by Niels C. Klendshoj, M.D., Assistant Professor of Pathology Director of the Division of Toxicology, University of Buffalo, 279 pp., Illus., Charles C. Thomas—Publisher, Springfield, Ill., (1953), Cloth $7.75.

Briefly, this book presents the fundamental aspects of biochemistry and its application to clinical medicine, permitting the reader to scan it in a reasonably short time, or to obtain a brief review of whatever subject in this field demands his attention at the moment. The subject is introduced by two chapters devoted to atomic and molecular structure, clarifying elementary definitions for the busy medical practitioner. The next seven chapters contain material of more fundamental biochemical nature. The last nine chapters consider the practical aspects of biochemistry in clinical medicine. In other words, the physiological and biochemical disorders in the common disease entities. This arrangement facilitates the approach to the various subjects and is time-saving for reviewing.

Veterinary Dermatology, by Frank Kral, V.M.D., M.V.D., Associate Professor of Veterinary Medicine, University of Pennsylvania, and Benjamin J. Noval, Ed.D., Chairman, Science Dept., Murrel Dobbins Vocational-Technical School, Phila., J. B. Lippincott Co., Phila., (1953), 325 pp., Illus., Cloth, $10.

This book is a singular contribution to everyday practice. Throughout the twenty-one chapters, detailed descriptions cover etiology, clinical symptoms, diagnosis and complete practical therapeutic methods on animal skin diseases. The 124 exceptional illustrations furnish valuable adjuncts to the authors' excellent clinical discussions. Numerous and well-tested prescriptions are offered, many of which can be prepared in the veterinary office from readily obtainable ingredients. The striking role of the newer drugs, the antibiotics and the steroids, is also fully covered. Complete

(*Continued on page 858*)

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Cholesterol

(Continued from page 759)

Test	Results
Dipole moment	1.99
Molecular heat of combustion (at constant volume)	3984.6
Molecular heat of combustion (at constant pressure)	3991.3
Specific heat of combustion	10300
Magnetic susceptibility per gr. (−xX10⁶)	0.735
Interfacial tension (one per cent in white oil of 74″ Redwood No. 1)	5.6
Fluorescence in filtered ultra violet light	Mauve.
Iso-electric Point, app.	pH.3

Two official specifications at least are in existence for cholesterol, the United States Pharmacopoeia specification[45] and that of the American National Formulary.[46]

	U.S.P.	U.S.N.F.
Melting Point °C.	147-150	147-149
Specific Rotation (a) 25/D (alcohol)	−28 to −31°	—
Loss on drying (3 hrs. @ 100°C.)	<0.1	—
Loss on drying (6 hrs. @ 100°C.)	—	Negative
Acidity (= Mls N.H_2SO_4)	<0.3	—
Acidity (= Mls. N.HCl)	—	<0.3
Ash	<0.1	—

Solubility

Figures given in the literature for solubility of cholesterol are at times very conflicting, and whilst the material is generally regarded as being insoluble in water, one paper quotes a solubility of 0.26 per cent at 25°C. Its solubility in ethyl alcohol in grams per 100 mls. at differing concentration and at different temperatures is summarized as follows:

Concentration of Alcohol	Temperature °C. 0°	20°	25°	60°	Boiling
Absolute	—	—	1.9	—	—
96 per cent	0.68	—	1.1	7.85	27.7
95 per cent	—	2	—	—	—
92 per cent	—	1	—	—	—
85 per cent	—	0.5	—	—	—
76 per cent	—	0.16	—	—	—
55 per cent	—	0.02	—	—	—

Solubility in high strength or aqueous ethyl alcohol is increased by the presence of lecithin, tannic acid and tannates, and also by the aid of soaps and soap-like materials, including sulfonated oils, other aliphatic and cyclo-aliphatic alcohols, triethanolamine and ethyl acetate.

The solubility of cholesterol in various other solvents is summarized in the Table below, in grams per 100 mls. of solvent.[157]

Solvent	0	10	20	25	30	40	50	65
Absolute Methanol	0.34	0.5	0.65	—	1.0	1.5/1.8	2.25	5.3
Acetone	1.66	2.5	4	—	5	9	—	—
Benzene	—	3	5.5	—	7	13.5	18	—
Dioxane	—	6	9/11	—	17	23	—	—
Dioxane/water (8.2)	—	—	0.85	—	—	—	—	—
Ethyl Acetate	2	2.5	4.5	—	6	9.5	15.5	—
Petroleum Benzene	1.25	1.5	2.33	—	3	6.5	10.5	—
Isopropanol (75 per cent)	—	—	1.0	—	—	—	—	—
Isopropanol (65 per cent)	—	—	0.5	—	—	—	—	—
Chloroform	—	—	—	15	—	—	—	—
Eth. Ether	—	—	—	26	—	—	—	—
Pyridine	—	—	—	68	—	—	—	—
Pyridine/water (50/50)	—	—	—	1.1	—	—	—	—
Liquid Ammonia	0.006	—	0.072	—	0.11	0.30	0.54	—
Furfuraldehyde	—	—	0.33	—	—	—	—	—
Isobutanol	—	—	6.3	—	—	—	—	—
Amyl Alcohol	—	—	10.5	—	—	—	—	—

The sterol dissolves slightly in soaps and in its own

oxidation products (high molecular weight acids), and is soluble in most oils, fats, and waxes, and in alkyl amines.

Other useful solvents are methyl and amyl salicylates and benzyl alcohol, and it is reported to be soluble in paraldehyde.[117]

The alkyl amine solutions can be diluted to a considerable degree with water without precipitation of the sterol. Some amines combine with the material, triethylamine being an example. Alkaline solutions are said to modify cholesterol to some degree.[197] The solubility of cholesterol in various simple solvents increases regularly as the dielectric constant decreases.[163]

Solubility of cholesterol has been found not to be additive for mixed solvents. For example in alcohol/water or dioxane/water mixture, solubility is greatly diminished, whereas in dioxane/benzene, benzene/hexane, benzene/alcohol, alcohol/hexane and hexane/dioxane mixtures, solubility is increased, reaching a maximum at the ratio shown:

Solvent	Cholesterol dissolved at 20°C.
Dioxane in benzene 45:55 per cent weight	19 grams
Benzene in Hexane 76:24 per cent "	22 "
Benzene in Alcohol 18:82 per cent "	33 "
Alcohol in Hexane 43:57 per cent "	24 "
Hexane in Dioxane 40:60 per cent "	33 "

Clear aqueous solutions of cholesterol may be obtained by treating it with aqueous solution of polyethylene glycol ethers of fatty alcohols or fatty esters. For instance, it is soluble to the extent of 0.1 percent in a three per cent solution of sorbitan mono-laurate polyglycol ether, and a clear solution may also be prepared by heating one per cent cholesterol, 2.5 per cent cholesteryl oleate and six per cent polyglycol ether of oleyl alcohol. Alkyl sulfates also have the property of bringing cholesterol into solution in water.[191]

Another method of dissolving the alcohol is first to make a solution of it in a halogenated hydrocarbon, and then to add a proportion of one or more of the monovalent lower alcohols, such as propyl alcohol.

Bile will dissolve cholesterol and its esters, and desoxycholic acid is one of its best solvents.

Investigations into the solubility of cholesterol in bile salt solutions has shown that to solubilize one part of cholesterol, 80 parts sodium cholate, glycocholate or taurocholate are required. In 50 parts sodium anthropodesoxycholate or 20 parts desoxycholate, also one part cholesterol is soluble.

An aqueous solution of 6.95 per cent sodium glycocholate and 2.35 per cent taurcholate will dissolve 0.185 per cent cholesterol, and this figure is increased by addition of 1.2 per cent almond oil soap.

The solubility in sodium oleate solution is similar to its solubility in sodium desoxycholate, but when both are present in 0.1 N concentration, twice as much cholesterol will dissolve. Lecithin will also increase the solubility in sodium desoxycholate solution.

At a temperature of 80°C., 20 parts cholesterol is soluble in 80 parts beeswax, ceresin wax or spermaceti. In cocoa butter, 10 parts dissolve, and in stearic acid,

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25 parts. Solid solution of cholesterol may be obtained in substances of higher melting point, such as napthylamines and naphthalene.

In the liquid state, cholesterol is partly miscible with ammonium nitrate and it forms eutectic mixtures at 144°C. containing 97 per cent cholesterol.[148] Solubility in liquid ammonia from −38° to +49°C. has been recorded. Between these two temperatures the solubility ranges from 0.0 to 0.545 per cent.[204]

Single eutectic mixtures are obtained with binary mixtures of cholesterol and the following fatty acids[193]:

Fatty Acid	M.P. of Mixture	Per Cent Acid
Palmitic Acid	56°C.	25
Stearic Acid	63.5°C.	27
Stearolic Acid	44°C.	14
Brassidic Acid	55°C.	19
Behenolic Acid	52°C.	14

The Table following gives further rough indication of cholesterol solubility:

Qualitative Solubility of Commercial Cholesterol at 15/20°C. (five per cent by weight)

CS = Completely soluble
S = DVery slight deposit
SS = Substantially soluble
SI = Substantially insoluble
CI = Completely insoluble

Amyl Alcohol	CS
Amyl Acetate	SD
Amyl Formate	CS
Acetal Solvent	SD
Absolute Alcohol	SI
Arachis Oil	SS
Butyl Alcohol	SD
Butyl Acetate	SD
Butyl Lactate	SI
Butyl Oleate	SI
Butyl Propionate	SD
Benzyl Alcohol	SD
Carbon Tetrachloride	SS
Castor Oil	SS
Cyclohexanol	SI
Chloroform	CS
Cyclohexylamine	SD
Dipentine	SS
Dibutyl Phthalate	SD
Diamyl Phthalate	SD
Ethylene Glycol Mono-Ethyl Ether	SI
Ethylene Glycol Mono-Butyl Ether	SI
Ethylene Glycol Mono-Methyl Ether	SI
Ethylene Glycol Mono-Methyl Ether Acetate	SI
Ethyl Alcohol	SI
Ethyl Acetate	SI
Ethyl Lactate	SI
Ethyl Oleate	SI
Ethyl Ether	SD
Ethyl Palmitate	SI
Ethylene Dichloride	SI
Hexyl Alcohol	SD
Isopropyl Alcohol	SD
Isobutyl Alcohol	SD
Kerosene	SS
Liquid Paraffin	SS
Methyl Cyclohexanol Stearate	SI
Methyl Cyclohexanol	CS
Methyl Cyclohexanol Acetate	CS
Methyl Alcohol	SI
Methyl Ethyl Ketone	SI
Mineral Oil (Light)	SD
Morpholine	CS
Petroleum Ether	SI
Trichlorethylene	SD
White Spirit	SI
Xylol	CS

Colloidal Solutions

Another way the properties of cholesterol may be utilized is the aqueous colloidal solution.

Most samples of commercially available cholesterol form colloidal solutions with ease when their alcoholic solutions are poured into water, whilst solutions of highly purified cholesterol are very unstable and coagulate very soon after preparation, even in concentrations as low as two per cent.

The preparation of colloidal solutions is reported to be possible only in the presence of protective agents, and impurities in commercial cholesterol are therefore thought to act as such and stabilize its colloidal solutions, even in concentrations of cholesterol of eight to 10 per cent.

However, the nature of the initial solvents used, the temperatures employed and stirring speeds are all indicated to be of great importance in producing stable colloidal solutions, and a concentration of 18 per cent cholesterol is regarded as the top figure which can be safely employed.[1]

The preparation of these solutions, which are hydrophilic solutions of the suspensoid type and electronegatively charged is typified by the following example:

One gram of cholesterol is dissolved in 100 mls. of ethyl alcohol gently heated, and 5 mls. of this solution is then dispersed into 80 mls. of distilled water, which is preferably at 65 °C. The water will then become slightly cloudy.

Acetone and many other similar solvents may be employed instead of alcohol and, if desired, the solvent may be eliminated from the colloidal solution by boiling for a short period.

If sodium soap solutions are used in place of plain water, dispersion is very much more rapid and if, particularly, sodium ricinoleate solutions are used in place of water, dispersion is even more rapid and the suspension stable for several days.[73]

Colloidal solutions of cholesterol have also been prepared by first dissolving 24 grams lecithin in ethyl alcohol to which is then added eight grams cholesterol and seven grams cholesterol palmitate with seven grams cholesterol oleate; all previously dissolved in a liter of acetone. This solution is then injected into water and the solvents removed by heating.[118]

Stability tests on colloidal solution of cholesterol in the presence of various inorganic salts, bile, proteins etc. have shown that the nature of the solution medium is of lesser importance than the pH value, which is the main stability factor.

A cholesterol suspension flocculates at a pH value of 2.4-5.0 but in more alkaline solutions it is more stable. Surface-active agents shorten the time of flocculation.[71]

The more acid the medium the more effective are inorganic salts in precipitating the cholesterol.

The coagulating action of cations on cholesterol solutions is in the order, potassium, sodium, ammonium, lithium, magnesium, calcium, barium, aluminium, iron, and of the anions, sulfate, fluoride, chloride, nitrate, bromide, cyanate, iodide and carbonate.[74]

Short electric waves of the order of five meters have a coarsening action on aging cholesterol colloidal solutions and some alkaloids, glucose and nicotine also

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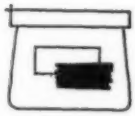

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KOMMON/ SCENTS!

Thanksgiving finds most of us counting our blessings while some continue counting their profits. Under increased taxes and still unbalanced budgets, the former seem to outnumber the latter.

•

Area of national gratitude run all the way from the arts and sciences to the happy trivia of sports and the entertainment world. In other words, there are some who would like to write the nation's books but others who'd rather audit them.

•

Hollywood, for example, deserves thanks for its Three-Dimensional pictures. To be completely frank, bespectacled movie audiences didn't really like the movies any more than former audiences did. But movie patrons were at least given a chance to look at themselves and one another for a better laugh than they got on the screen.

•

In baseball, the New York Yankees thrilled the nation with their fifth straight American League pennant and fifth consecutive World's Series win. It was not the first time they knocked opposition pitchers out of the box and opposition managers out of work.

•

In boxing, Rocky Marciano demonstrated anew that the best defense is a good offense. Unfortunately, there are critics who still maintain that the choice of Marciano's opponents was even more offensive than the Massachusetts mauler himself.

•

Thanks are also expressed by many for the second Kinsey Report, variously classified between the arts, sciences and professions. Kinsey is credited by some with having proven that normalcy is sometimes more a matter of arithmetic than morality.

•

Only in the field of Atomic Energy do we find our gratitude alloyed with fear. We are not so much concerned with the Russian successes as the worry that they may start spending instead of stockpiling their A-Bombs.

•

The Cosmetic Industry, of course, has much for which to be grateful. Youthful relatives who used to wind up on the payroll now detour via Selective Service.

George Fiedler

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have an effect on their action under certain conditions.

Stabilizers for these colloidal solutions include sodium iodoxy-quinoline sulphonate, lecithin, bile acids and albumen. In concentration of the order of 0.5 to five per cent, albumen for example, is reported to be capable of stabilizing cholesterol solutions of up to 12 per cent concentration.

Gelatin protects colloidal solutions when present in sufficient quantity, by formation of a mono-molecular layer at the interface between the particle and the medium. The swelling of gelatin is promoted if cholesterol is dissolved or suspended in it.[70-75]

Other substances stabilize cholesterol in colloidal solutions by forming weak chemical complexes e.g. glucose, which forms "gluco-cholesterol." Cholesterol esters which are regarded as being hydrophobic in nature also act as protective colloids for cholesterol solutions.

Cholesterol colloidal solutions have strong reducing properties, and quickly reduce ferricyanides, for example, in the presence of air, but on the other hand possess oxidizing power towards diamines and naphthol. They catalyze the decomposition of hydrogen peroxide.[200]

Cholesterol colloidal solutions diffuse through semi-permeable membranes with maximum diffusion taking place at pH 7.8.

Cholesterol itself is easily oxidized as a colloidal solution at room temperature by an air current. At 85°C. after two hours, only 20 per cent is left unchanged. The primary product appears to be 7-keto-cholesterol, and 0-7-hydroxycholesterol.[80]

(To be continued)

Present Status of FDA Factory Inspection

(Continued from page 761)

formula files, complaint files, and personnel files within the scope of required inspections. FDA interprets this to mean that inspection of these records will be on a voluntary basis.

"Accordingly, inspectors have been instructed to ask permission to see such records or files whenever there is any need or reason to examine them or to obtain information contained in them.

"The inspector may state reasons for asking to examine a particular record or file but will not otherwise press the owner, operator or agent for permission to see it."

Let us hope that this frank and cooperative statement will set the keynote for all future inspections. I see no reason to anticipate that it will not.

We come now to the problem confronting each of you manufacturers. Should you voluntarily open your formula, complaint and personnel files to inspection?

First of all, I must say that each firm should set its own policy in this respect and adhere to it consistently without deviation. It would indeed appear suspicious if these files were opened to inspection at one time, then refused on a subsequent visit. The inspector could, with logic, only conclude that something was wrong

and his superiors would be inclined to take other available action to acquire the information refused.

It is my personal opinion that each firm should carefully weigh any policy that makes these records voluntarily available. If only 50 per cent of manufacturers open their files willingly, I can anticipate that the slow encroachment of the years will restore the confusion that existed before the Cardiff decision. If these records are essential to proper enforcement activities then Congress should be asked to say so by legislation. Congress thus far has said "No"—has said "No" twice, in fact. Under these circumstances you need not have any reluctance in also saying "No."

One final word about shipping records. Nothing has been said about invoices and shipping records for the good reason that "factory inspection" never was supposed to include these. There is another section of the law—Section 703—that does apply to the inspection of interstate records. But this only opens records of (1) carriers in interstate commerce, (2) persons *receiving* drugs in interstate commerce and, lastly, persons holding these products after receiving them in interstate commerce. The provision does not compel either a manufacturer or shipper to permit access to, and copying of, his records to obtain evidence relating to interstate movement of the goods, with one minute exception where the manufacturer operates directly in interstate commerce by employing his own trucks.

However, where you do grant the inspector permission to examine these shipping records and invoices, the information can be used against you in a civil case arising out of violation of the law—and, although this is not altogether clear, likely in a criminal prosecution also.

I hope I have dispelled some of the confusion on this important subject. A clear understanding and concept of your rights may save you considerable grief at some future time.

Mass Neurosis

(*Continued from page 763*)

is caused by a neurasthenic; the writer does insist that lowered emotional stability, impatience, difficulty of concentration, confusion, fatigue, poor reaction time, and impaired reasoning power, all, individually or collectively, play a vital role in our highway death toll. With increasing clarity, it becomes apparent that neurologic and psychologic inadequacy are causative factors in crime. Emotional instability, personality changes, loss of sociologic and moral balance, inability to differentiate right from wrong—these are the mechanism of lawlessness. Normal people respect law not only because of inevitable punishment for illegal conduct, but because law was created and is enforced for the benefit of all. Stevenson[3] states, "it is not necessary to count hospital patients to find the evidence of mental illness and how widespread it is—we need only to look at the daily papers to find a ghastly review of the incidence of mental illness." He continues, "murder,

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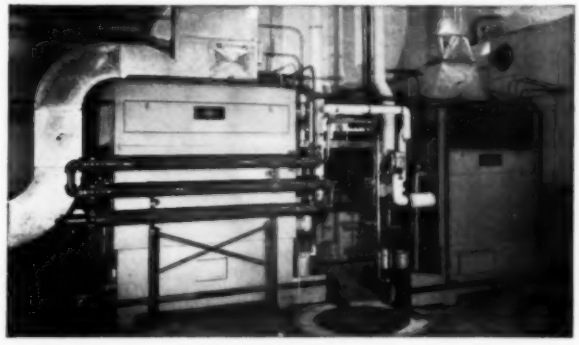

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suicide, delinquency, sex crimes, kidnaping, broken homes, alcoholism, strife, unhappiness—these are the signs of mental illness and we need not look for them in hospitals or clinics alone."

Industry, which is the strength of America, too suffers by virtue of nervous disease. Absenteeism, inferior and reduced workmanship, accidents, employee friction, interruption of production lines and general restlessness, all components of the neurasthenic syndrome, exact billions of dollars in industrial losses. According to the National Association for Mental Health, hospitalized mental patients lose $1,175,000,000 in wages annually. These figures become more significant when it is realized that mental disease of clinical severity is but a small fraction of the total when compared with the number of persons suffering from sub-clinical disturbances.

This discussion should have brought into focus that any decline in mental or neurologic health generates direct, remote and manifold repercussions. The consumption of billions of doses of nerve sedatives and the endless smoking of countless cigars and cigarettes constitute irrefutable evidence that we have in America an immense number of persons in a state of mental and/or neurologic deterioration ranging in degree from irritability to insanity. That portion of our population who are apparently normal cannot afford to shrug their shoulders and merely feel compassionate for the multitude less fortunate. The conduct of such a huge segment of our society affects the entire country, economically and sociologically. Mental incapacitation, especially in later years, is paid for by all in the form of taxes for hospitals and social aid. Loss of production and services is damaging to the nation's economy as a whole. No one can deny that mental disease in any form or degree is, or should be, the concern of all.

The question now arises why should nervous disease be as prevalent as outlined. We have produced unimpeachable proof indicating mass mental pathology. It is difficult to reconcile this formidable disease with the lack of any aggressive attack on same. Strange but true. The infectious invasions have been all but conquered; many of the degenerative diseases have been subjected to intensive research although with not too much success; but mental disease, one of the most insidious, subtle and costly enemies has escaped attention. If and when the etiology of nervous disorders is forced into discussion, the only factors advanced are "our modern tempo of living" and "stress" as exemplified in the large American city. These terms encompass a number of phases; probably our most merciless driving force is the desperate economic battle—first to earn merely the necessities of life, followed by a struggle for security and wealth. The mental drain involved in these objectives can be, and are, appreciable; if carried to extreme, are irreparably damaging. The constant race with time, social and psychologic frustrations, noise and countless other annoyances and irritations may be compared with drops of water ceaselessly impinging upon our neurons, eventually weakening or altering

same. Radio, television, movies, sports and other forms of entertainment offer a fantastic amount of excitement or neural stimulation for which a price must be paid—neurologically speaking. Concertedly, these aspects of modern living must be acknowledged as being of significance in the overall picture of our neurologic status but they are not basic. The effects may be compared with a "trigger mechanism" rather than being primarily pathogenic.

There exists considerable evidence to support this contention. For instance, the level of mental health in England is comparable with that in the United States; in no degree can their tempo of living, rural or urban, be compared with ours, being of course far less hectic. Prescriptions studies do not disclose any material difference in the employment of sedatives between rural and city areas—nor is there any difference in cigarette sales, i.e., on a per capita basis. Therefore it is logical to assume that neurasthenia in rural zones is more or less on a plane with that found in the cities. By virtue of this equality it seems safe to rule out "tempo," "high pressure living," etc., as being major factors in the production of nervous disease. As a measurement of our mental health, sedative and tobacco consumption has no peer. The dimensions of same have already been elaborated upon. Since it is vast, and homogenously distributed, the etiology too must be of a similar composition. It may be summed up in one word, nutrition.

The literature is abundant with experimental and clinical data illuminating the relationship between certain nutritional deficiencies and the multiple hues of nervous disease. The role of thiamine in the maintenance of normal nerve function is well recognized. A deficiency of this food accessory will elicit pathology involving degenerative changes in the nervous system. Progressive signs and symptoms in the beriberi syndrome are as follows: neurasthenia, anorexia, nausea, loss of weight, fatigue, muscular weakness and cramps, tingling and numbing in arms and legs, cardiac enlargement, dilatation and, finally, circulatory collapse. Severe cases of clinical beriberi is a rarity in this country. However chronic, low-grade deficiencies of thiamine are extremely common; the earliest symptom is neural deterioration manifested by gross changes in behavior, mental depression, irritability, loss of efficiency, fatigue, restlessness, confusion and hypochondriasis. Williams and co-workers[4,5] confirmed this picture as far back as 1939. A thiamine deficiency was induced in a group of healthy persons by restricting the diet for 88 days or longer. These subjects at the end of this period exhibited the classic syndrome anticipated—anorexia, fatigue, loss of weight, constipation, tenderness of calf muscles, gross changes in behavior, mental depression and irritability. This study and many others conducted along the same lines is the keystone in the support of this discussion, namely nutritional neurasthenia. In every case prompt recovery followed the administration of thiamine which obviously speaks for itself. Wilder[6] found that moderate thiamine deficiency leads to disturbances of attitude and behavior. Severe inadequacy

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gives rise to serious disorders of the central nervous system. Barborka[7] reports, that among other signs of early nutritional deficiency, (B group), are nervous, irritable and depressed reactions. Also apprehension, weeping spells, forgetfulness and mental confusion.

Vitamin A, riboflavin and pyridoxine have been discovered also to be essential for the normal functioning of nerve tissue. Observations[8] in vitamin A deficient animals revealed lesions of the central nervous system such as myelin degeneration of the cord, medullary tracts and peripheral nerves; also constriction of the optic nerve with resultant blindness. Riboflavin deficiency in dogs was found to cause spasticity, weakness and degeneration of the medullary sheaths. Pyridoxine deficient dogs were discovered to develop degenerative changes in myelin sheaths. A recent investigation[9] brought to light the phenomenon of convulsions in pyridoxine deficient infants. Spies, Bradley, Rosenbaum and Knott[10] advise that large-scale anxiety and emotional states often attributed to inherent defects of mentality are largely nutritional in origin.

The very latest entry into the neurologic orbit is vitamin B_{12}. As a growth-promoting factor, and in the treatment of pernicious anemia, this agent is nothing short of magic. Its versatility extends even further. Neurologic changes which occur in association with pernicious anemia improve after treatment with B_{12}. Encouraged by this observation, trials were conducted in other neuropathologies such as peripheral neuritis, paresthesias of the legs, alcoholic polyneuritis, tabetic and sciatic pains, etc. In practically all cases, some degree of success was obtained and in many instances complete relief was effected. Levy[11] feels that vitamin B_{12} is involved in the biosynthesis of desoxyribonucleic acids which are essential in the functioning of nerve cells. A lack of these compounds is in all probability another contributory factor in the impairment of neurologic normality.

Low-grade, chronic nicotinic acid deficiency is being more fully recognized and appreciated, even in well fed America. It occurs in sub-clinical form in all social and economic groups and shows but minor differences in geographic distribution. Niacin starvation, or pellagra, is characterized by a complex syndrome embracing the skin, alimentary tract and nervous system. Only the neurologic aspects are of interest herein. An insufficiency of nicotinic acid and other nutritional elements found associated with same engenders in the early stages, a chain of mental symptoms. Confusion, distraction, difficulty of concentration, loss of memory, anxiety, irritability, these and other aberrations are to be expected in mild deficiencies. Acute deprivation will evoke delusions, hallucinations and dementia. The psychotic phase of early pellagra has been subjected to detailed study by numerous workers including Evans,[12] Checkley et al[13], Jolliffe et al[14], Spies[15], Spies and Associates[16]. Wilbur[17] lists early mental symptoms associated with niacin deficiency as follows: restlessness, nervousness, insomnia, lassitude, irritability, vague aches and pains, lack of energy, tendency to excess

worry and fatigue. Spies amplifies this picture with vertigo, headache, paresthesia, forgetfulness, apprehension and distractability.

To the physician, these manifold symptoms must sound monotonously familiar—hearing and seeing them as he does days on end. Notwithstanding the publication of at least a decade of investigation in the field of nutrition, and particularly the role of deficiencies in widespread lowered mental health, the practitioner has failed or refused to recognize any of the information revealed. In consequence we have the sad spectacle of millions of neurasthenics seeking aid and receiving only sedation or psychiatry—neither of which can possibly effect a cure. We have presented but a fragment of the tremendous exploration in the field of diet and disease. Those who wish to pursue the science further, are referred to any good medical library with a pencil and time.

One of the strangest and most devastating phenomena of our civilization, as we know it in America, is starvation in the midst of plenty. Nutritional deficiencies and errors have spawned a multitude of degenerative diseases, among which is mental deterioration. We shall at a later date delineate in detail the manifold factors responsible for the devitalization and denaturalization of our dietary.

REFERENCES

1. Personnel Executives Newsletter, Feb. 12, 1953, via Ind. Med. March, 1953.
2. Chemical Facts and Figures, Manufacturing Chemists Association, 3rd ed., p. 25, 1950.
3. Stevenson, C. S., Annual Meeting, National Association for Mental Health, Cleveland, Nov. 1, 1953.
4. Williams, R.D., and Mason, H. L., Preliminary Report, Proc. Staff Meet. Mayo Clinic 16:433, 1941.
5. Williams, R. D.; Mason, H. L.; Smith, B. F.: Proc. Staff Meet., Mayo Clinic 14-787, 1939.
   Williams, R. D.; Mason, H. L.; Wilder, R. M. and Smith, B. F.: Arch. Int. Med. 66:785, 1940.
6. Wilder, R. N., Experimental Induction of Psychoneurosis through Restriction of Thiamin. Milbrook Memorial Fund, The Biology of Mental Health and Disease 1952.
7. Barborka, C. J., Can. M.A.J., 66:105, 1952.
8. Nutrition Reviews, 8:205, July, 1950.
9. Snyderman, S. E.; Carreters, R., and Holt, L.E.: Federation Proc., 9:371, 1950.
10. Wilder, R. N., Experimental Induction of Psychoneurosis through Restriction of Thiamin. Milbrook Memorial Fund, The Biology of Mental Health and Disease, 1952.
11. Levy, I.: Tr. Am. Neurol. A., 1950, p. 267.
12. Evans, V. L.: J.A.M.A., 112:1249, 1939.
13. Cleckley, H. M.; Sydenstricker, V. P. and Geeslin, L. E.: 112:2107, 1939.
14. Jolliffe, N.; Bowman, K. M.; Rosenblum, L. A.; and Fein, H.D.: J.A.M.A., 114:307.
15. Spies, T. D.: J.A.M.A., 122:911, 1943.
16. Spies, T. D.; Vilter, R. W.; and Ashe, W. F.: J.A.M.A. 113:931, 1939.
    Spies, T. D.; Bean, W. B. and Ashe, W. F.: Ann. Int. Med. 12:1830, 1939.
17. Wilbur, D. L.: Specialties in Medical Practice, Nelson, New York City, 1940, p. 255.
18. Spies, T. D.; Aring, C. D.; Gelperin, J. and Bean, W. B.: Am. J. Med. Sc. 196:461, 1938.

Absorption Bases

(Continued from page 765)

Whitlet,[17] the ointment of wool alcohols is used as the base for making tannic acid ointment and witchhazel ointment, while the hydrous preparation forms the base for ointments of the following drugs: boric acid, salicylic acid, ammoniated mercury, oleated mercury, mercuric chloride, sulfur, zinc oleate, and zinc oxide.

However, a number of workers expressed dissatisfaction with this base from the standpoints of consistency, hardness and other characteristics. As a result, the Seventh Addendum to the B.P. permitted the proportions of the hydrocarbons to be varied and made pro-

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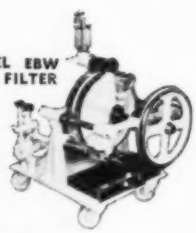

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vision for the use of lighter grades of liquid petrolatum instead of the regular heavy oil. This, of course permitted variations in formulation to meet specific requirements.

In addition to these official products, various absorption bases made with wool alcohols have been suggested by several workers. Michaels,[18] for example, offered the following combination, which produces a base of satisfactory consistency and which is equally useful for large- or small-scale production:

Wool alcohols	**60.0 parts**
Paraffin	**170.0 "**
Petrolatum	**170.0 "**
Liquid petrolatum	**600.0 "**

As with other natural raw materials, investigators set out to isolate the ingredient chiefly responsible for lanolin's efficacy. It is now generally accepted that cholesterol is the most important single constituent of the wool wax alcohol mixture.[13] Its value as an emulsifier is now well established. Thus, in citing reports going as far back as 1912, Powers, Leask and Warner[13] remarked that cholesterol has often been recommended as a useful adjunct to petrolatum for increasing its ability to absorb water and for enhancing its value from a therapeutic or cosmetic viewpoint. Peel[13] describes cholesterol as an emulsifier of such potency that one per cent of this material in petrolatum yields an absorption base that will form a stable emulsion with 30 per cent of water.

These characteristics help to explain why cholesterol has become an important ingredient in many absorption bases. It is noteworthy, for example, that the official absorption base, hydrophylic petrolatum, U.S.P., contains cholesterol. Its composition is as follows:

Cholesterol	**30.0 Gm.**
Stearyl alcohol	**30.0 Gm.**
White wax	**80.0 Gm.**
White petrolatum	**860.0 Gm.**
to make	**1000.0 Gm.**

Melt the stearyl alcohol, white wax, and white petrolatum together on a water bath, then add the cholesterol, and stir until it completely dissolves. Remove from the water bath, and stir until the mixture congeals.

The official base ranked high in the comparative evaluation of absorption bases made by Halpern.[20] Thus, in testing the compatibility of the bases, he found that it rated "excellent" as a vehicle for aluminum acetate (10 per cent solution), benzoic acid, boric acid, calamine, mercuric oxide, ammoniated mercury, phenol, resorcinol, salicylic acid, sodium propionate, sulfathiazole, undecylenic acid, vitamins A and D, zinc oxide, and zinc peroxide. It rated "good" for coal tar, coal tar solution, lead subacetate solution, and balsam Peru. It was rated a poor carrier for camphor.

A rather interesting cholesterol-containing absorption base, differing from most products in that it contains a vegetable oil, is known as Aquabase. Said[12] to resemble

a well-known commercial preparation, it is described in a standard reference text[1] as consisting of:

Cholesterol	**30.0 Gm.**
Cottonseed oil	**30.0 Gm.**
White petrolatum	**940.0 Gm.**

Heat the petrolatum and oil to 145°C. Remove from heat, add the cholesterol and stir until congealed, then pour into jars.

Certain cholesterol esters, while having no emulsifying action by themselves, are capable of improving the effectiveness of cholesterol. In their 1952 report on the emulsifying constituents of lanolin, Tiedt and Truter[16] had discussed the intensifying effect of such esters upon cholesterol and had offered an explanation of their action.

More than a decade earlier, Powers and his colleagues[19] had made a study of the efficacy of various cholesterol-cholesterol-ester mixtures in absorption bases. They found that three per cent of cholesterol in white petrolatum emulsified 250 per cent of water. However, it was observed that mixtures of three per cent each of cholesterol and cholesterol esters in petrolatum yielded superior results. Thus, the use of cholesterol acetate, laurate, palmitate, and stearate absorbed 500, 600, 700, and 800 per cent of water, respectively.

Subsequently, a combination of this type was used by Johnston and Lee[21] to make an effective absorption base. They used a mixture of:

Cholesterol	**3.0 Gm.**
Cholesterol stearate	**3.0 Gm.**
Lanolin, anhydrous	**25.0 Gm.**
White petrolatum	**69.0 Gm.**

Heat the petrolatum and lanolin to about 150°C., add the cholesterol and cholesterol stearate and stir until solution is effected. Stir occasionally while cooling.

This base, it was observed, easily takes up 300 per cent of water and will emulsify even more. The resulting emulsion showed no separation of water when rubbed upon the skin and its spreading characteristics were quite satisfactory. A number of satisfactory ointments were made with this base. Halpern[20] also gave this product a high rating with regard to compatibility and absorption properties.

Emulsions prepared from the cholesterol-cholesterol-ester absorption bases have been criticized for lack of satisfactory stability. In attempts to overcome this disadvantage, Cataline, Reinish and Worrell[22] studied the influence on stability of a number of agents. They found that soybean lecithin and cetyl alcohol improved the shelf test and skin test qualities of emulsions made from absorption bases made with three per cent each of cholesterol and cholesterol stearate in white petrolatum. The lecithin enhances the emulsifying efficiency of this base. Cocoa butter, diglycol stearate, castor oil, hydrogenated castor oil, heavy mineral oil, carbitol and triacitin were of little, or no, value in improving the stability of the emulsions.

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The introduction of emulsifiers not derived from lanolin has increased the range of raw materials suitable for use in the formulation of absorption bases. An interesting example of such utility is offered in Rosenthal's patent.[23] This describes the production and application of condensation products of oleic acid with monoethanolamine or diethanolamine; these emulsifiers being mixed with petrolatum or the like. Of interest in this connection is the availability of a commercial absorption base for pharmaceutical use. Called Hydrosorb, it consists of a mixture of the oleic acid ester and amide of diethanolamine in white petrolatum.

Also noteworthy are the processes described by Brown[24] for reacting sorbitol or mannitol with oleic acid to produce esters for making absorption bases. The use of such materials is illustrated in the commercial product known as Polysorb, which is described[20] as "sorbitan sesquioleate in a wax-petrolatum mixture." This preparation has been evaluated by Perrin and Halpern[25] who described it is a useful hydrophylic absorption base with complete absence of skin irritation, wide compatibility with drugs, and strong water-absorption as its outstanding characteristics. They also reported that this preparation showed no sensitizing properties with combinations of commonly used dermatological drugs in both animal and human skin studies.

Formulas for making similar absorption basis are available from several sources.[3] According to Peel[13] and to Pascal,[26] a suitable anhydrous base may be made by melting and mixing the following ingredients:

Sorbitan sesquioleate (Arlacel C)	**10.0 per cent**
Beeswax	**5.0 " "**
Petrolatum	**60.0 " "**
Mineral oil (65/75)	**25.0 " "**

For use in the preparation of water-in-oil emulsions, this base is heated to 65°C. and up to 40 per cent of water at 70°C. is added with agitation. Lanolin or other appropriate adjuncts may be added to such a base and, if desired, the petroleum derivatives may be replaced with animal or vegetable waxes and vegetable oils.

This last brings to mind the fact that materials other than hydrocarbons are recommended from time to time for use in absorption bases. For example, Hembrough[3] cites British patent 572,318 in which it is suggested that improved bases may be produced by mixing hydrogenated vegetable oils with wool wax alcohols. Thus a base that yields emulsions of firm, stable consistency may be made from:

Wool wax alcohols	**7.0 per cent**
Lanolin	**7.0 " "**
Hydrogenated cottonseed oil	**86.0 " "**

A number of absorption bases are available under various proprietary names (e.g. Aquaphor, Eucerin, Falba, Hydrosorb, Polysorb, Protegin) for use in the preparation of ointments for the treatment of dermatological conditions, burns, wounds and similar disorders. In discussing such bases, Perrin and Halpern[25] observe that the water-in-oil emulsions made with them show

many advantages over the oil-in-water type of preparations. For example, the water-in-oil base, because of its continuous oil phase, provides a direct contact with the surface lipids of the skin. Moreover, the continuous oil phase acts as a protective covering for the treated area; this being in contrast to the oil-in-water base in which there is a weakening in this desirable property due to the presence of an external aqueous phase. In addition, the oil-in-water bases dry out; resulting in a deposition of fatty materials and a concentration of active ingredients.

It should also be noted that absorption bases are valuable where an emollient action is desired.[27] Suitable proportions of such bases are sometimes included in therapeutic ointments and creams in order to impart this useful property. Although absorption bases are rather greasy, they are more readily removed from the skin than the fatty bases.[1]

As already indicated, an important advantage of absorption bases for pharmaceutical compounding is their compatibility with a wide range of therapeutic substances. They are very useful when it is required to incorporate relatively large amounts of aqueous preparations, such as coal tar solution, Burow's solution or lead subacetate solution, into ointment bases.[12]

Despite this high degree of compatibility, many workers have been concerned with the question of drug release and utilization from these bases. There are data[28] which show that the release of certain water-soluble drugs is greater from water-miscible and oil-in-water emulsions than from grease bases and water-in-oil emulsions. However, in the frequently cited work of Skauen and his colleagues,[29] ointments made with absorption bases showed a high degree of efficiency with respect to absorption of radioactive sodium iodide through the skin of rats. It was found that a difference in the type of emulsion, whether water-in-oil or oil-in-water, does not seem to have an appreciable effect upon the absorption of iodide ion from emulsion bases.

Drugs are released more readily from ointments made with absorption bases than from those made with other greasy bases. For example, Li and Kuever[30] showed that when an aqueous solution of phenylmercuric nitrate was added to an absorption base it displayed distinctly higher potency than when incorporated in the official white ointment. More recently Bhatia and Zopf[31] reported that lanolin and its fractions enhanced the absorption of phenolsulphonphthalein from petrolatum.

Also worth noting is Lower's[4] observation concerning tests which have shown that absorption bases can actually be absorbed through the skin, especially if irradiated; thereby increasing the cholesterol content of the blood and noticeably improving the appearance and texture of the skin.

In the pharmaceutical field, absorption bases serve, in the main, as vehicles for drugs. In cosmetic manufacture, these bases may be the chief ingredient, but in most cases they are mixed with other components to impart a number of desirable characteristics to the

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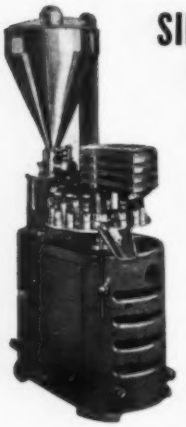

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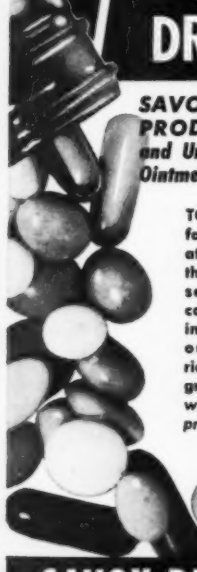

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creams, lotions and other preparations. In these products, the inclusion of a suitable preparation of an absorption base provides easier emulsification, high water-binding effects, a finer texture, and highly desirable emolliency. This inclusion also helps to combat drying, both in the product and on the skin.

However, formulation and processing procedures are important. It has been stressed[4] that great improvement can be attained in color, texture and stability if absorption base creams are passed through a homogenizer. This also results in resistance to higher-than-usual temperatures.

The ability to impart these desirable qualities to cosmetics helps to explain why absorption bases are used in the manufacture of such varied products as cold creams, emollient creams, lubricating creams, cleansing creams, all-purpose creams, powder creams, hormone creams, hair dressings, cream shampoos, deodorant creams, suntan preparations, nail-care products, brushless shaving creams, lipsticks and lip pomades, perfume sticks, cream sachets, and make-up bases.

Data on the manufacture of these and other products are provided not only in standard cosmetic texts,[6-32] but also, in considerable detail, in the literature of absorption base manufacturers. Some of these manufacturers provide special bases that often greatly simplify the production of certain types of cosmetics. For example, a cleansing cream can be prepared quite readily from

Absorption base (Iso-Lan*)	**20.0 per cent**
Mineral oil	**30.0 " "**
Water	**50.0 " "**

(*Goldschmidt Chemical Corp., New York, N. Y.)

Even simpler is the following procedure for making an all-purpose cream that can be cold-filled:

Absorption base (Base 256*)	**35.0 parts**
Water	**65.0 "**
Preservative	**sufficient**

(*Morningstar, Nicol, Inc., New York, N. Y.)

Heat together to 45°C. Mix until room temperature is reached and let stand overnight. Mix again before filling.

It is obvious from the foregoing that modern absorption bases fill an important role in the production of effective therapeutic ointments and superior cosmetics. Continued improvement and specialization of absorption bases will broaden their use.

BIBLIOGRAPHY

1. Cook, E. F. and Martin, E. W.: "Remington's Practice of Pharmacy," Ed. 10, Easton, Mack Publ. Co., 1951, pp. 297-8, 1472-5.
2. Anon.: Am. Prof. Pharm. 11:236, 1945.
3. Hembrough, G. R.: Chem. Prod. 16:175, May, 1953.
4. Lower, E. S.: "Wool Wax Alcohols in Cosmetics," England, Croda, Ltd., 1946, 50 pp.
5. Lesser, M. A.: Drug & Cosmetic Ind. 58:786, 1946.
6. De Navarre, M. G.: "Chemistry and Manufacture of Cosmetics," New York, D. Van Nostrand Co., 1941, pp. 65-8, 233-4, 380-1.
7. Anon.: "A Guide to Cosmetic and Pharmaceutical Formulations with Atlas Products," Wilmington, Atlas Powder Co., 1953, p. 53.
8. Ellis, F. A.: Arch. Dermat. & Syph. 56:801, 1947.
9. Schwarzfeld, H. K.: U. S. Armed Forces Med. J. 9:1371, 1952.
10. Sulzberger, M. B. & Lazar, M. P.: J. Investig. Dermat. 15:453, 1950.
11. Sulzberger, M. B., Warshaw, T. and Herrmann, F.: J. Investig. Dermat. 20:33, 1953.
12. Ehrenstein, E.: Am. J. Pharm. 122:208, 1950.

13. Peel, N. S.: Soap, Perf. & Cosmetics 25:1269, 1952.
14. Lee-Charlton, H.: Soap, Perf. & Cosmetics 10:61, 1938.
15. Lifschutz, L.: Pharm. Zentralhalle 63:305, 1923.
16. Tiedt, J. and Truter, E. V.: J. Applied Chem. 2:633, 1952.
17. Whittet, T. D.: Soap, Perf. & Cosmetics 17:94, 1944.
18. Michaels, I.: Chemist & Druggist 143:200, 1945.
19. Powers, J. L., Leask, H. P. and Warner, R. S.: J. A. Ph. A., Scient. Ed. 29:14, 1940.
20. Halpern, A.: J. A. Ph. A., Pract. Ed. 12:83, 1951.
21. Johnston, G. W. and Lee, C. O.: J. A. Ph. A., Scient. Ed. 32:25, 1943.
22. Cataline, E. L., Reinish, F. and Worrell, L.: J. A. Ph. A., Scient. Ed. 34: 36, 1945.
23. Rosenthal, N. K.: U. S. Pat. 2,398,254, 1946.
24. Brown, K. R.: U. S. Pat. 2,372,807, 1945.
25. Perrin, S. R. and Halpern, A.: J. Investig. Dermat. 16:7, 1951.
26. Pascal, R. H. (Atlas Powder Co., Wilmington, Del.): Personal Communication.
27. Hughes, F. N.: Canad. Pharm. J. 77:945, 1944.
28. Zheutlin, H. E. C. and Fox, C. L., Jr.: J. Investig. Dermat. 11:161, 1948.
29. Skauen, D. M., Cyr, G. N., Christian, J. E. and Lee, C. O.: J. A. Ph. A., Scient Ed. 38:618, 1949.
30. Li, P. and Kuever, R. R.: J. A. Ph. A. 37:1217, 1938.
31. Bhatia, V. N. and Zopf, L. C.: J. A. Ph. A., Scient. Ed. 41:542, 1952.
32. Thomsen, E. G.: "Modern Cosmetics," Ed. 3, New York, Drug & Cosmetic Industry, 1947.

Steroid Hormone Products

(Continued from page 755)

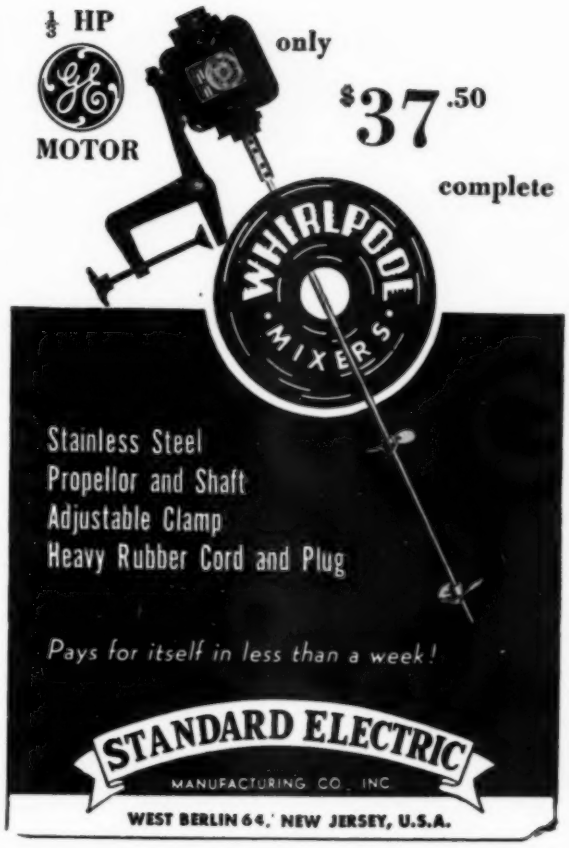
steroids in Mexico dropped so low that most of the steroid manufacturers in Europe and the U. S. had to abandon their own processes and either use Mexican starting materials or buy their finished hormones from Mexican sources.

Roussell and Schering-Berlin, through superior know-how and low cost of labor are still able to compete on testosterone and synthetic estrone but the huge disproportionation which resulted from the development of the adrenal steroid market has almost completely smashed the bulk market for sex steroids. From the original price of $80 per gram in 1945, progesterone dropped to $3.00 by 1949. Both testosterone and progesterone can now be bought for under 80 cents per gram and, in tonnage quantities, progesterone can be had for under 40 cents and 16-dehydropregnenolone, for under 20 cents per gram.

Cortisone and Hydrocortisone

When in 1946, Kendall, with the aid of Sarett, was able to perfect a practical synthesis of cortisone from ox bile, the first large-scale investment in adrenal steroid manufacture was undertaken. That this was a sound investment became clear in 1949, with the discovery of the effects of cortisone on rheumatoid arthritis. During 1949 and 1950, Merck & Co. remained the sole cortisone producer in the world and, at the same time, worked seriously to establish quantity production from ox bile. Simultaneously, a world-wide search was started by Merck, and many other pharmaceutical houses, for new cortisone-starting materials. Merck also announced a synthesis of hydrocortisone, and evidence was obtained that this compound might be of even greater interest than cortisone.

During 1951, both the Glidden Company and Schering started cortisone production from ox bile according to their own modifications of the process. Both of these companies operated on a relatively small scale, although their processes possessed certain advantages over the original Merck process. At the same time, several partial syntheses from ergosterol, diosgenin and cholesterol were announced by Merck, Syntex



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and other research groups. Searle, Upjohn and Parke-Davis announced biochemical syntheses utilizing adrenal perfusion or incubation of corticosteroid precursors with adrenal slices or brei. Total syntheses were also announced by investigators in the United States working on grants from Merck and Monsanto, and also by a group in England.

In 1952, the microbiological oxidation of steroids was patented by Upjohn, and for the first time a process which was truly competitive with the ox-bile process was put into commercial use. The Upjohn development permitted the use of non-oxygenated steroids as a starting material and broke the bottleneck which ox bile represented. It was almost immediately clear that steroids obtainable from plant sapogenins would be the cheapest and most readily available starting materials, and the head start which the Mexican hormone producers had in this direction became vitally important. Upjohn devised a process for conversion of progesterone to 11-alpha-hydroxyprogesterone microbiologically, and then in a 10-step synthesis, produced cortisone.

Compound S can also be efficiently used in this process to produce "epi F" and then in two steps can be converted to cortisone. Upjohn also reported on the conversion of S directly to hydrocortisone, but indications are that the yields are smaller. In late 1952 and in 1953, Squibb, Pfizer and other groups undertook work on microbiological syntheses, and there were some reports on similar conversions using other organisms.

During 1952 and 1953, strong competition developed between potential suppliers of steroid-starting materials. Progesterone was supplied in relatively huge quantities by Mexican producers at prices below 50c a gram. The Glidden Company, having developed a highly efficient process for synthesis of compound S, also offered this material in large quantity at prices that would be competitive with progesterone.

As a by-product of its microbiological investigations, Squibb announced the discovery that several halogenated intermediates in their conversion of epi F to cortisone had greater activity than cortisone itself, in the liver glycogen deposition test. Other announcements also indicate that the microbiological conversion of S to hydrocortisone may be economically feasible. If these results are confirmed, it seems likely that compound S might surpass progesterone in usefulness as a starting material. The recent merger of interests between Pfizer and Syntex would seem to be a reflection of the great advances that have been made in the fermentation of steroids.

As of the present writing, the important factors in cortisone production are still Merck, Upjohn and Schering. It is probable that their present monthly production breaks down as follows:

Merck	200 kilos
Upjohn	80 "
Schering	30 "

The future potential of these organizations cannot be easily predicted. Merck has shown no sign

that it intends to exploit any starting material other than ox bile, for the time being. Roussell, in France, is producing cortisone from ox bile, and has offered bulk supplies in this country. It is believed that their production is still on a limited scale. While Pfizer has entered this field with hydrocortisone, the future plans of Squibb and Lederle are not known at the present time.

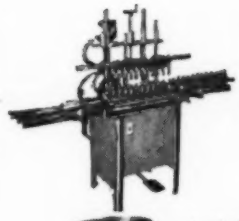
Since labor is the highest cost in the production of a complex steroid molecule, it does not seem likely that processes involving total synthesis will be undertaken unless total consumption reaches many times the present levels. It is for this same reason that the microbiological processes which reduce enormously the number of steps involved have a potential advantage over the ox bile and other partial syntheses.

Since Merck was the first to enter large-scale production, they still have the strong advantage of a relatively low cost per gram, and so long as they can maintain or expand their sales, they can offset the lower labor costs in the microbiological processes. This fact would seem to be the key to the struggle for production and sales. Any shift in this balance may change the picture completely. This fact also helps to explain the price policies followed by the leading cortisone producers and the intensive sales efforts being made today.

The Market for Steroid Products

It has been estimated that of every 10,000 prescriptions, 131.6 are for estrogens and 6.10, for androgens. This compares with 38.1 prescriptions for thyroid preparations. Estrogens are presently sold mainly for the treatment of menopausal syndrome, functional uterine bleeding, senile vaginitis and suppression of lactation. It is estimated that there are 1,127,500 such cases at the present time and that this market may double within the next ten years. Progesterone has been prescribed only for the prevention of habitual abortion. There are approximately 10,000 such cases per year at the present time. With the anticipated increase in the population and improved knowledge of how to use this hormone, the number of cases per year that will probably be treated ten years from now is estimated at 75,000. Testosterone is used for the treatment of the male climacteric, uterine bleeding, impotence and sterility, female menopause and for its anabolic effects. The estimated number of cases treated a year at the present is 1,750,000. A conservative estimate of the annual use 10 years from now puts this figure at 5,000,000.

The sales of the sex hormones have until recently been mainly in the hands of three or four of the leading specialty houses. In the year 1951, it is estimated that the total volume in sex hormones amounted to $12,000,000. Of this, approximately 64 per cent was sold by Schering, Ciba and Organon. The remaining 36 per cent represented the sales of all other houses. By 1953, the dollar volume had shrunk to $8,000,000, due



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mainly to price declines. In this year the business was more widely distributed with many smaller houses offering their own products.

The shrinking dollar volume for the sex hormone specialties was compensated for by the development of new outlets for bulk steroid sales. In 1950, pregnenolone was introduced for the treatment of arthritis, and it is estimated that the bulk sales for this steroid amounted to $6,000,000 for that year. While pregnenolone failed to live up to its promise, the bulk producers of steroids soon found that they could continue large-scale production of "desoxy" steroids to be used as precursors for the microbiological processes for cortisone and hydrocortisone. In the year 1952 it is estimated that the bulk sales for progesterone and compound S amounted to some $6,000,000.

The story of cortisone sales parallels in many phases the dramatic history of penicillin. In 1951, with an average price of $25.00 per gram at the processor level, the dollar volume was approximately $30,000,000. With the price declining to $11.00 a gram and then $7.60 per gram in the next two years, the dollar volume diminished to $22,000,000 and $18,240 respectively. Now that the price of cortisone is down to a level where it can be prescribed with some reasonableness for the patient of average means, the sales have proven somewhat disappointing. After the initial hue and cry had subsided, physicians became cautious about the indiscriminate use of cortisone and in many cases seemed to be frightened by the reports of side effects due to over-dosage. As more information was placed in their hands, however, more and more physicians are learning to use the product with confidence and new and important clinical applications are being reported daily.

Sales figures are not yet available for hydrocortisone, which has only recently become available at reasonable prices. The conditions for which hydrocortisone will be prescribed are identical with those for which cortisone is now being used, with the exception that it is felt to be more effective in certain applications. Cortisone and hydrocortisone are being used in the collagen disorders, arthritis and rheumatoid fever, in allergic disorders of the skin, asthma and hay fever, in local inflammatory conditions such as those which occur in the eye and nose and also in alcoholism and various endocrinopathies. The present instance for these various diseases is well over the 10,000,000 mark. With the daily increase in our knowledge of how to use these drugs, and the constant educational campaign that is being carried on by the firms detailing the physicians, this market can be expected to grow at a steady rate.

Management Forum

(Continued from page 807)

The new Baker truck uses a low-pressure hydraulic system. Its motor-driven gear pump supplies oil under pressure to either lifting or tilting cylinders, with speed controlled by acceleration of the engine; excess is bypassed to the reservoir. Oil is transmitted through high-

pressure oilproof hose.

The Yardloader is produced in the Minneapolis plant of Baker-Raulang's subsidiary, The Baker-Lull Corporation.

Dispersator

The PREMIER MILL CORPORATION, Geneva, N. Y. announces two new DISPERSATOR Drive Units to be added to their line of Standard Equipment. Labeled the Series 2400, for beam or channel mounting with open tanks, and the Series 3200, for flange mounting-sealed system operation, these Units are designed to operate in the 30- to 300-gallon batch range. They incorporate such rugged, maintenance-free construction features as flexible motor couplings, sealed-for-life bearings, sturdily welded (or cast) support frames.

The driven DISPERSATOR Shaft in the 2400 Unit is readily demountable by loosening the chuck. The 3200 shaft is fixed, since alignment at a mechanical seal is often required.

DISPERSATOR Equipment is now in use in a variety of mixing applications which benefit from high intensity. These particular Units will be of specific interest in the following ranges:

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The new units make DISPERSATORS available over a range of electrical characteristics and will permit development and small scale production operations in the field of chemical and petrochemical reactions, as well as the dye and pigment industries.

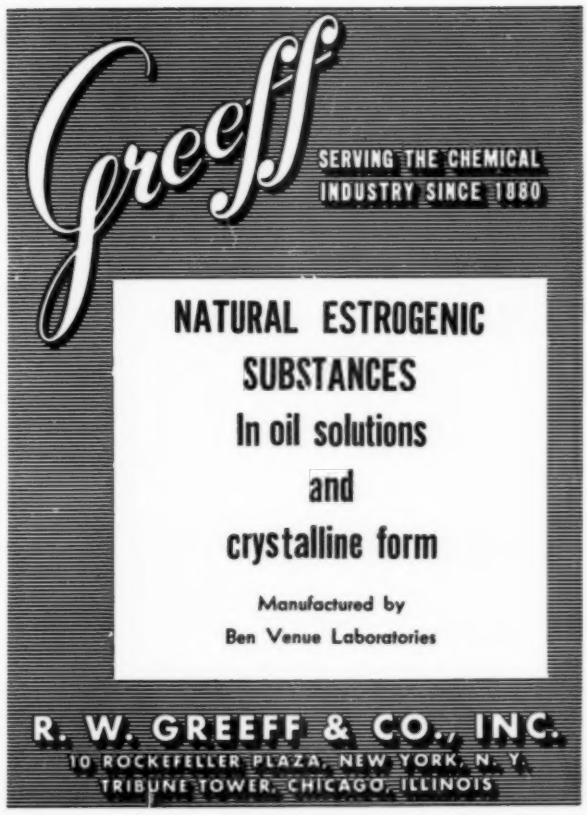
Both of these Units were on display at the Chemical Show in Philadelphia.

New Filling Machine

HOPE MACHINE COMPANY, 9400 State Rd., Phila. 14, Pa., has just introduced a new filling machine, the Type 19A. This is the latest of many improvements which have been pioneered and developed for the good of the industry. The new Type 19A Filling Machine is the culmination of 30 years' experience and incorporates every operational feature found desirable in filling viscous and liquid products. By the elimination of the long, unnecessary machine table, increased production speeds (up to 250 containers per minute) and reduced costs have been effected without sacrificing any of the time-tested principles which have made it a leader in the filling machine field.

The operation of Hope's Type 19A is described this way; the containers move from the infeed conveyor directly onto the rising table. After the "bottom up" filling occurs, the containers are moved immediately onto the discharge conveyor.

This machine can be used for filling glass jars, plastic bottles, tin cans and paper cups. Hope has tested the machine in filling containers of mayonnaise, salad



Brown Bag's unique new FORMAPAK machine packets your dry, free-flowing product — from a few grams up to ½ ounce — at exceptionally low cost. Forms and fills packets from 2" x 2½" to 4½" x 4½" — or any intermediate size — from 40 to 100 per minute.

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Also available are an assortment of accessories, such as agitators, oil or water jackets, manifold chests and special nozzles for dripless operation.

New Small Electron Microscope

A new Philips Electron Microscope (EM-75) at about half the cost and with approximately half the power of the large Philips unit (EM-100) is now available from the Research & Control Instruments Division, North American Philips Company, Inc., 750 South Fulton Avenue, Mount Vernon, N. Y.

Suitable for analytical work in industrial processing, research, medicine, pathology and biology, the new instrument utilizes an electron-optical system that includes condenser, objective and projector lenses.

Magnification is continuously adjustable between 1500 and 15,000 diameters and is variable between 10 and 75 Kv. Resolving power is better than 100 Angstroms under average operating conditions.

The new unit has a magnetic stabilizer for high voltage and lens currents. The electron gun is self-biased, is equipped with an emission meter and the V-shaped filaments are easily replaced.

The electro-magnetic deflection method is used for beam alignment and focussing is facilitated by means of a beam wobbler. Specimen carriers for 1/8 inch diameter grids and plates are available and a specimen airlock is utilized to obtain quick working cycles.

Stereoscopic exposures can be made by tilting the specimen carrier 15 degrees, without breaking the vacuum. Diameter of the fluorescent screen is 4-3/8", diameter of images 3-1/8" and a supplemental 2x optical magnifier is available that fits into place on the column.

A camera using 35 mm standard film is employed on the microscope and each loading permits the making of rapid sequential exposures without breaking the vacuum. The camera is completely controlled from the outside of the column and a special device prevents double exposures. An exposure register is built-in.

The new Philips EM-75 electron microscope has two pumps, one a rotary pre-vacuum unit and the other an oil diffusion unit. Pumps do not require cooling by liquid air or water. Vacuum obtainable is 10^{-4} mm of mercury and an ionization gauge with a neon tube is employed for measurement. A more exact determination is obtained by switching the emission microammeter over into the circuit of the gauge.

All apertures are easily accessible for cleaning without dismantling the column. Full provision has been made to safeguard the equipment against damage through breakdown or faulty manipulation. It is impossible to have the high tension switched on when the equipment is not in proper working condition. Operator

is fully protected against X-radiation under all circumstances.

The Philips EM-75 electron microscope is approximately 74″ high, 37″ wide, and 25″ deep. Power supply is 220 volts, 50 or 60 cycles and power consumption is about 1 Kw.

Patent Thoughts and Trends

(*Continued from page 825*)

attorneys in the drug field, where therapeutic products are often made by natural processes long before the identity of the therapeutic material has been ascertained, and consequently long before the material has been made synthetically. Patents not limited to the method of preparation have been issued in the drug field, in similar cases.

RECENT PATENTS

2,656,274—**F. Tiedt and R. Dewald (Germany)—Process for Production, Concentration and Stabilization of Fat-Soluble Vitamins and the Like from Carrots.**

2,656,298—**Loewe Research Foundation—Enteric Coating Comprising an Anion Exchange Resin and Formalized Protein.**

2,656,299—**Am. Products—Dry Penicillin—Synthetic Gum Hydrophylic Suspending Agent Composition.**

2,656,300—**Mathieson Chem. Corp.—Producing Streptomycin and Vitamin B_{12} Metabolite.**

2,656,345—**G. D. Searle—Alpha - Aryl 9 - Oxo - dehydroabietinols.**

2,656,347—**Chas. Pfizer — Streptomycin Broth Clarification with Sequestering Agents.**

2,656,348—**Ciba Pharmaceutical Products—Steroids Having a 17-Positioned Semicyclic Double Bond.**

2,656,349—**Ciba Pharmaceutical Products—14.15-Oxides of the Cyclopentanopolyhydrophenanthrene and Polyhydrochrysene Series.**

2,656,350—**Eaton Labs.—Chemotherapeutic Nitrofurans: Substituted 5-Nitro-2-Furaldehyde Semicarbazones.**

2,656,356—**Upjohn—6-Phenoxymethylpteridines.**

2,656,357—**Am. Cyanamid—1-Piperazyl-4-Methylthioxanthones.**

2,656,358—**Schering—Pyridin Antihistaminics.**

2,656,359—**R. T. Vanderbilt Co.—Lauryl Pyridinium Salts of Chlorophenoxy—Acetic Acids.**

2,656,363—**Syntex (Mexico)—Prepn. of Cyclopentanoperhydrophenanthrenes.**

2,656,364—**Schering — Manufacture of 17 - Keto Steroids.**

2,656,365—**Ciba P. P.—Oxo-Steroids.**

2,656,366—**Merck, Water-Soluble Esters of Cortisone.**

2,656,367—**Merck, Steroids.**

(*Continued on page 859*)

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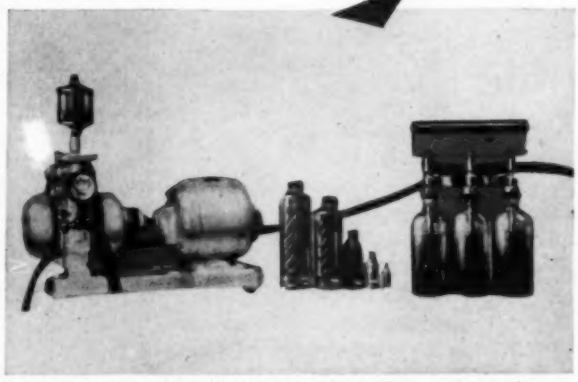

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Industry's Books

(*Continued from page 835*)

and systematic development of veterinary dermatology, detailed coverage of etiology and treatment, inclusion of special topics, such as Eczema, Drug Eruptions, Food Rashes, Photosensitization, Skin Tumors, should make this book indispensable as a reference to practitioners as well as a text for courses in veterinary dermatology.

The Allergic Patient And His World, (Including Sources of Allergens), by Florence Eastty Sammis, M.D., M.S.P.H., F.A.A.A., Assistant Attending Physician in Allergy, Nassau Hospital, Mineola, with Pollen Charts, Maps and Photographs, by Oren C. Durham, Chief Botanist, Abbott Laboratories, North Chicago, 156 pp., Charles C. Thomas, Publisher, Springfield, Illinois, (1953), Cloth $4.75.

Dr. Sammis has collected in this book much of the varied information that will enable the allergic patient to cooperate intelligently with his physician and save the latter hours of tedious explanations. No encouragement is offered for self diagnosis or self treatment; the purpose is purely to help the allergic patient to furnish pertinent information and carry out professional advice. A chapter is devoted to each of the major forms of allergy; asthma, hay fever and allergic skin conditions—the minor forms are also covered briefly. The most important feature of this book is that it gives questions and answers in allergy, making it an ideal book for use in patients' instruction.

Antibiotics, by Robertson Pratt, Ph.D., Professor of Pharmacognosy and Plant Physiology, University of California College of Pharmacy, and Jean Dufrenoy, D.Sc., (Paris), Research Associate in Antibiotics, University of California College of Pharmacy, Second Ed., Illus., 398 pp., J. B. Lippincott Co., Phila., (1953), Cloth, $7.50.

Important discoveries based on principles developed earlier in the study of antibiotics have emerged from the more than 7,000 research papers that have appeared in the four years since the first edition was published. For a clear perspective of the field of antibiotics these discoveries must be considered in relation to the previously established facts and principles, some of which in turn must be re-evaluated in relation to the newer developments. To that end, five new chapters have been written, and the earlier material has been revised. To show each new phase of the subject of antibiotics in its proper perspective, this edition has been organized into 4 parts: Fundamental Aspects, Industrial Aspects, Applied Aspects, and Modification of Biologic and Social Systems. At the end of each chapter a few guides to the pertinent literature are listed.

Atlas of Regional Dermatology, by Ernest K. Stratton, Ph.D., M.D., Research Associate, The George Williams Hooper Foundation for Medical Research, University of California Medical Center, San Francisco, and Harry L. Arnold, Jr., M.D., Maurice J. Costello, M.D., Lewis A. Koplik, M.D., Paul Fasal, M.D., 274 pp., 9" x 12", Illus., Charles C. Thomas, Publisher, Springfield, Ill., Cloth $15.

This outline of dermatology in atlas form presents regional groupings of most of the common skin diseases. As nearly as possible, skin diseases involving any one certain location and in which there might be a differential diagnosis problem, are kept together. For each condition, the significant details are pointed out (and made easy to find by the use of an italic heading): Synonyms; Etiology; Symptoms; Diagnosis; Treatment. Where more than one picture of the same disease is included, pictures involving different locations have been selected and an effort has been made to show a different stage or form of the disease in each location. Intended for those who need visual help in identifying skin diseases. Every page illustrates two or more skin conditions and makes it easy for the practitioner to put his finger on the essential information he needs in each case.

Metallurgical Dictionary, by J. G. Henderson, Consulting Mechanical and Materials Engineer, assisted by J. M. Bates, B.S., Met. Eng., University of Illinois, Book Div., Reinhold Publishing Corp., New York, (1953), 396 pp., Cloth, $8.50.

Arranged specifically for the needs of of all metal industries, this reference book contains over 5,000 informative definitions and descriptions covering all the most essential terms in both production and physical metallurgy. Its sole purpose is to provide a comprehensive tool for all those who manufacture or use metals and metal products. Original definitions are included of a sizable number of terms such as flame plating, shell molding, and others which have only very recently appeared in magazine literature. As a convenient source of information, this volume will prove valuable to all scientists, engineers and technicians in the metallurgical and associated fields, and of great use to specification writers, purchasing agents, architects and builders.

The Van Nostrand Chemist's Dictionary, Board of Editors, Jurgen M. Honig, Ph.D., Assistant Professor of Chemistry at Purdue University, Morris B. Jacobs, PhD., Director of Laboratories, Department of Air Pollution Control, N.Y.C., S. Z. Lewin, Ph.D., Assistant Professor of Chemistry, Washington Square College, New York University, William R. Minrath, Ch.E., Vice-President, D. Van Nostrand Co., Inc., and George Murphy, Ph.D., Chairman, Department of Chemistry Washington Square College, New York University, 761 pp., D. Van Nostrand Co., Inc., New York, (1953), Cloth, $10.

This new dictionary brings together the information most often needed by the chemist of today. Its terms extend throughout the special fields of chemistry, inorganic and organic, analytical and physical, as well as industrial chemistry and chemical engineering. They include the chemical elements, radicals, ions and type-compounds, reflecting the latest terminology in naming compounds of silicon and phosphorus. They comprise more than four thousand chemical reactions, tests, solutions, apparatus, laws, equations and industrial processes, including both the general name terms and the proper name terms. For example, you can find in this book the terms mercurization, cetane rating, biuret reagent, the law of esterification, micronizer mill, and the equation of continuity, as well as the terms Baudisch reaction, Minovici reagent, Dubbs process Law of Raoult, Eotvos equation or Allihn condenser. You can turn to these pages with full confidence of finding the terms you encounter in chemistry, chemical engineering and related fields. Containing in all over eleven thousand definitions and descriptions, many of which are of more than one hundred words in length, organized by a system of cross-referencing that makes all related topics instantly accessible, this new type dictionary is an essential part of the reference library of every chemist.

(Continued from page 857)

2,656,368—Merck — Delta 17 - 20 - Cyeno - 11 - Hydroxypregnenes.

2,656,369—Merck — 3,20 - Diketo - 11,17 - Dihydroxy-21-Acyloxy-Pregnanes.

2,656,370—Upjohn — 11 alpha - Hydroxy - 4 - Androstene-3,17-Dione.

2,656,378—Carter Products — 2,2, Diphenyl - 1,3 - Propanediol Monocarbamate Antoconulsant.

2,656,381—Merck — Secondary Alkylsulfonamido Benzoic Acids.

2,656,385,6—Upjohn — Cyclohexenes and Cyclohexanols.

2,657,171—Merck — Storage — and Autoclave — Stable Concentrated Dihydrostreptomycin Solution.

2,657,172—The Carlton Corp.—Therapeutic Solution of Calcium Lactate and Calcium Glycerophosphate.

2,657,206—Burroughs Wellcome — 2,4 - Diamino - 5-Aryloxy-Pyrimidines.

2,657,209—Sterling Drug—Tertiary Aminoalkyl - 4-Alkylamino-2-Alkoxy-Benzoates.

2,657210—Sterling Drug — 4 - (Tertiary-Aminoalkanoylamino) - 2 - Alkoxybenzoic Acid Derivatives.

2,657,212—Burroughs Wellome—Diethanolaminopyridines.

2,657,219—Hoffmann-La Roche—Vitamin A Acetals.

2,657,235—Schenley Industries, Inc. — Aryloxybenzaldehydethiosemicarbazones.

2,658,018—State of Michigan—Synnematin.

2,658,022—Upjohn—Bio-oxidation of Steroids.

2,658,023—Chas. Pfizer—Steroids Oxygenation.

2,658,066—Burroughs Wellcome—2,4-Diamino - Phenoxypyrimidines.

2,658,067—Hoffmann-La Roche—Substituted Carbamic Acid Esters.

2,658,076—G. D. Searle—N-Dialkylaminoalkyl Derivatives of alpha, beta-Diarylalkanoamides.

2,658,077—Am. Cyanamid — Crystallization of Chlortetracycline.

2,658,078—Chas. Pfizer—Solvent Extraction of Oxytetracycline.

2,658,080—Wallace & Tiernan—Monobenzyl Ether of Diethylstilbestrol.

2,658,851—J. E. Brandenberger & F. J. Bossard—Salt Dentifrice.

2,658,873 — Armour — Germicidal Detergent Contains a sodium phosphate, water-soluble quaternary ammonium halide and sodium carbonate.

2,658,889—Hoffmann-La Roche — Substituted Phenylazomalonomtriles.

(Continued on page 861)

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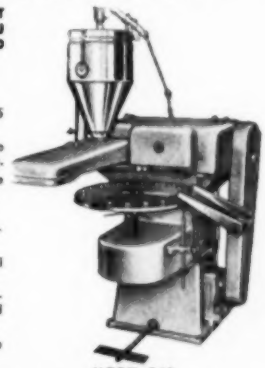
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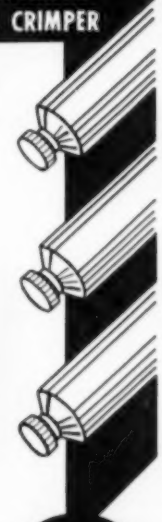
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(*Continued from page 859*)

2,658,896—Hoffmann-La Roche — Prepn. of Pteroyl-Glutamic Acid.
2,658,897—Burroughs Wellcome — 2,4 - Diamino - 5-Benzyl Pyrimidines.
2,658,904—Am. Cytoscope Makers—Halothenoyl-glycines.
2,658,905—Ciba Pharmaceutical — 2 - (N - Aryl-ethyl-Alkylaminomethyl)-Furanes.
2,658,911—Hoffmann-La Roche — 1,1,2 - Trimethyl-Propen-2-yl 3-Oxobutanoate Intermediate for methyl citral and pseudoirone.
2,658,912—Merck—Alpha methyl Glutamic Acid.

COURT CASES

2,232,826—L. Napolitan, Hair Dressing, filed March 27, 1953 (N. Y. C.), M. Louis Hair Design Institute v. Ingerid Studio of Hair Design et al.

U. S. *2,515,898*—H. W. Rhodehamel, Jr., Procaine penicillin and therapeutic compositions, Indianapolis, Eli Lilly & Co. v. Schenley Labs., Inc. Patent held valid and infringed.

2,628,184—R. R. Widmann, Composition to decrease the circulation of blood and lymph in vascular and allergic disorders, R. R. Widmann v. Walden Professional Pharmacy. Patent held valid and infringed by Los Angeles court.

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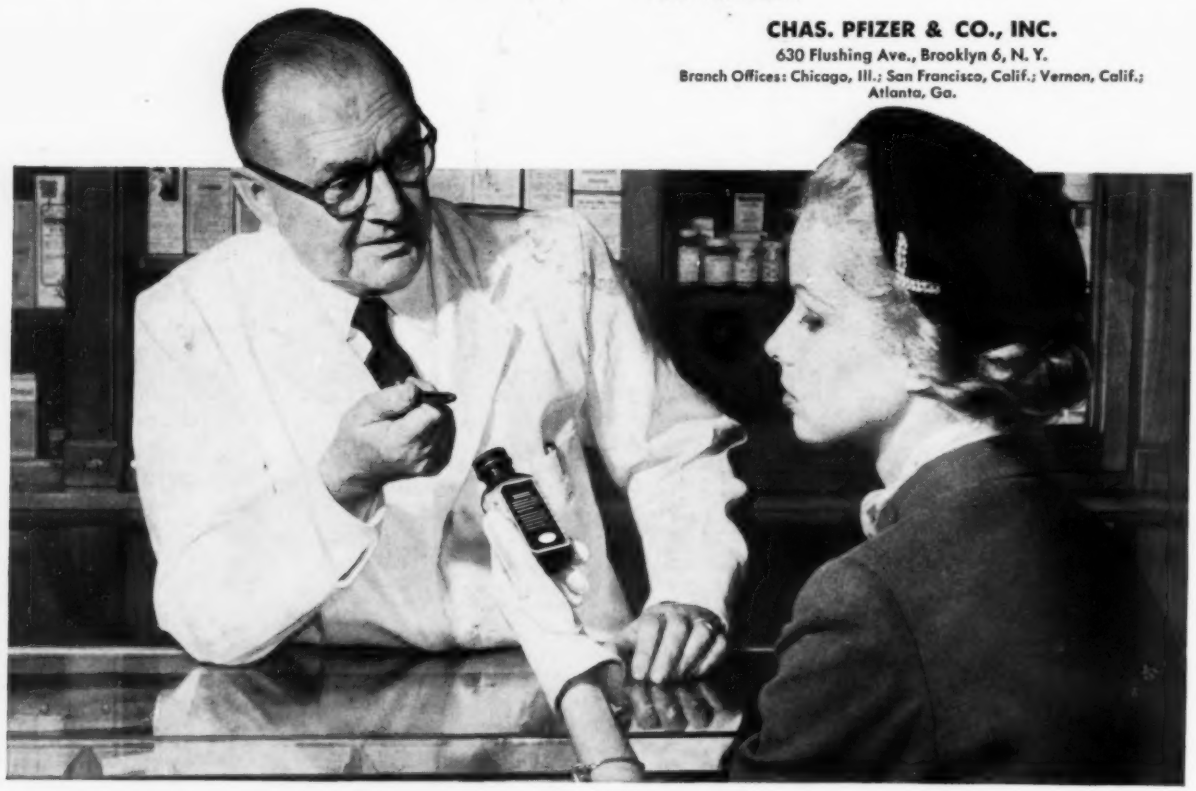

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